=> d his

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     FILE 'HCAPLUS' ENTERED AT 16:04:37 ON 24 APR 2007
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L1             1 S E3

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     FILE 'HCAPLUS' ENTERED AT 16:05:22 ON 24 APR 2007
               S 159640-28-5P OR 532945-75-8P OR 532945-76-9P OR  50-14-6/REG#

     FILE 'REGISTRY' ENTERED AT 16:07:11 ON 24 APR 2007
L2             1 S 50-14-6/RN

     FILE 'HCAPLUS' ENTERED AT 16:07:11 ON 24 APR 2007
L3          3046 S L2
L4         84872 S 159640-28-5P OR 532945-75-8P OR 532945-76-9P OR L3 OR 50-81-7
L5             1 S L4 AND L1

     FILE 'STNGUIDE' ENTERED AT 16:08:28 ON 24 APR 2007
L6             0 S 58-56-0 OR 58-95-7 OR 64-17-5 OR 68-04-2 OR 68-19-9 OR 72-17-

     FILE 'HCAPLUS' ENTERED AT 16:12:38 ON 24 APR 2007
               S 58-56-0/REG# OR  58-95-7/REG# OR  64-17-5/REG# OR  68-04-2/RE

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L7             1 S 471-34-1/RN

     FILE 'HCAPLUS' ENTERED AT 16:12:42 ON 24 APR 2007
L8         71050 S L7

     FILE 'REGISTRY' ENTERED AT 16:12:43 ON 24 APR 2007
L9             1 S 154-23-4/RN

     FILE 'HCAPLUS' ENTERED AT 16:12:43 ON 24 APR 2007
L10         7276 S L9

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L11            1 S 153-18-4/RN

     FILE 'HCAPLUS' ENTERED AT 16:12:44 ON 24 APR 2007
L12         8120 S L11

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L13            1 S 142-47-2/RN

     FILE 'HCAPLUS' ENTERED AT 16:12:45 ON 24 APR 2007
L14         3462 S L13

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L15            1 S 141-01-5/RN

     FILE 'HCAPLUS' ENTERED AT 16:12:47 ON 24 APR 2007
L16          394 S L15

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L17            1 S 137-08-6/RN

     FILE 'HCAPLUS' ENTERED AT 16:12:48 ON 24 APR 2007
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L18 1562 S L17

FILE 'REGISTRY' ENTERED AT 16:12:48 ON 24 APR 2007
L19 1 S 117-39-5/RN

FILE 'HCAPLUS' ENTERED AT 16:12:49 ON 24 APR 2007
L20 12740 S L19

FILE 'REGISTRY' ENTERED AT 16:12:49 ON 24 APR 2007
L21 1 S 99-20-7/RN

FILE 'HCAPLUS' ENTERED AT 16:12:50 ON 24 APR 2007
L22 8568 S L21

FILE 'REGISTRY' ENTERED AT 16:12:50 ON 24 APR 2007
L23 1 S 98-92-0/RN

FILE 'HCAPLUS' ENTERED AT 16:12:51 ON 24 APR 2007
L24 9798 S L23

FILE 'REGISTRY' ENTERED AT 16:12:51 ON 24 APR 2007
L25 1 S 83-88-5/RN

FILE 'HCAPLUS' ENTERED AT 16:12:52 ON 24 APR 2007
L26 19845 S L25

FILE 'REGISTRY' ENTERED AT 16:12:52 ON 24 APR 2007
L27 1 S 79-81-2/RN

FILE 'HCAPLUS' ENTERED AT 16:12:53 ON 24 APR 2007
L28 2999 S L27

FILE 'REGISTRY' ENTERED AT 16:12:53 ON 24 APR 2007
L29 1 S 72-17-3/RN

FILE 'HCAPLUS' ENTERED AT 16:12:54 ON 24 APR 2007
L30 3658 S L29

FILE 'REGISTRY' ENTERED AT 16:12:54 ON 24 APR 2007
L31 1 S 68-19-9/RN

FILE 'HCAPLUS' ENTERED AT 16:12:55 ON 24 APR 2007
L32 18502 S L31

FILE 'REGISTRY' ENTERED AT 16:12:55 ON 24 APR 2007
L33 1 S 68-04-2/RN

FILE 'HCAPLUS' ENTERED AT 16:12:56 ON 24 APR 2007
L34 7465 S L33

FILE 'REGISTRY' ENTERED AT 16:12:56 ON 24 APR 2007
L35 1 S 64-17-5/RN

FILE 'HCAPLUS' ENTERED AT 16:12:57 ON 24 APR 2007
L36 208783 S L35

FILE 'REGISTRY' ENTERED AT 16:12:58 ON 24 APR 2007
L37 1 S 58-95-7/RN

FILE 'HCAPLUS' ENTERED AT 16:12:58 ON 24 APR 2007
L38 3967 S L37

FILE 'REGISTRY' ENTERED AT 16:12:59 ON 24 APR 2007

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L39           1 S 58-56-0/RN

     FILE 'HCAPLUS' ENTERED AT 16:12:59 ON 24 APR 2007
L40        1703 S L39
L41      390609 S L6-L40
L42           1 S L41 AND L1

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     FILE 'HCAPLUS' ENTERED AT 16:15:58 ON 24 APR 2007

     FILE 'STNGUIDE' ENTERED AT 16:16:08 ON 24 APR 2007
L43           0 S  585-88-6 OR 585-91-1 OR  814-80-2 OR 970-74-1 OR  1406-16-2
L44           0 S  7439-95-4 OR  7439-96-5 OR  7440-09-7 OR  7440-23-5 OR  7440
L45           0 S 17375-37-0 OR   22839-47-0 OR   56038-13-2 OR  87419-56-5 OR

     FILE 'HCAPLUS' ENTERED AT 16:19:26 ON 24 APR 2007
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                S ( 7439-95-4/REG# OR   7439-96-5/REG# OR   7440-09-7/REG# OR

     FILE 'REGISTRY' ENTERED AT 16:19:59 ON 24 APR 2007
L47           1 S 7782-49-2/RN

     FILE 'HCAPLUS' ENTERED AT 16:19:59 ON 24 APR 2007
L48       67795 S L47

     FILE 'REGISTRY' ENTERED AT 16:20:00 ON 24 APR 2007
L49           1 S 7782-41-4/RN

     FILE 'HCAPLUS' ENTERED AT 16:20:00 ON 24 APR 2007
L50       47021 S L49

     FILE 'REGISTRY' ENTERED AT 16:20:01 ON 24 APR 2007
L51           1 S 7723-14-0/RN

     FILE 'HCAPLUS' ENTERED AT 16:20:01 ON 24 APR 2007
L52      184182 S L51

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L53           1 S 7647-14-5/RN

     FILE 'HCAPLUS' ENTERED AT 16:20:02 ON 24 APR 2007
L54      140648 S L53

     FILE 'REGISTRY' ENTERED AT 16:20:03 ON 24 APR 2007
L55           1 S 7632-00-0/RN

     FILE 'HCAPLUS' ENTERED AT 16:20:03 ON 24 APR 2007
L56       13244 S L55

     FILE 'REGISTRY' ENTERED AT 16:20:04 ON 24 APR 2007
L57           1 S 7553-56-2/RN

     FILE 'HCAPLUS' ENTERED AT 16:20:04 ON 24 APR 2007
L58       61923 S L57

     FILE 'REGISTRY' ENTERED AT 16:20:05 ON 24 APR 2007
L59           1 S 7447-40-7/RN

     FILE 'HCAPLUS' ENTERED AT 16:20:05 ON 24 APR 2007
L60       69110 S L59

     FILE 'REGISTRY' ENTERED AT 16:20:06 ON 24 APR 2007
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L61           1 S 7440-70-2/RN

     FILE 'HCAPLUS' ENTERED AT 16:20:06 ON 24 APR 2007
L62       386527 S L61

     FILE 'REGISTRY' ENTERED AT 16:20:07 ON 24 APR 2007
L63           1 S 7440-66-6/RN

     FILE 'HCAPLUS' ENTERED AT 16:20:08 ON 24 APR 2007
L64       302308 S L63

     FILE 'REGISTRY' ENTERED AT 16:20:09 ON 24 APR 2007
L65           1 S 7440-50-8/RN

     FILE 'HCAPLUS' ENTERED AT 16:20:09 ON 24 APR 2007
L66       534031 S L65

     FILE 'REGISTRY' ENTERED AT 16:20:10 ON 24 APR 2007
L67           1 S 7440-48-4/RN

     FILE 'HCAPLUS' ENTERED AT 16:20:10 ON 24 APR 2007
L68       186215 S L67

     FILE 'REGISTRY' ENTERED AT 16:20:11 ON 24 APR 2007
L69           1 S 7440-23-5/RN

     FILE 'HCAPLUS' ENTERED AT 16:20:12 ON 24 APR 2007
L70       226304 S L69

     FILE 'REGISTRY' ENTERED AT 16:20:13 ON 24 APR 2007
L71           1 S 7440-09-7/RN

     FILE 'HCAPLUS' ENTERED AT 16:20:13 ON 24 APR 2007
L72       222325 S L71

     FILE 'REGISTRY' ENTERED AT 16:20:14 ON 24 APR 2007
L73           1 S 7439-96-5/RN

     FILE 'HCAPLUS' ENTERED AT 16:20:14 ON 24 APR 2007
L74       187584 S L73

     FILE 'REGISTRY' ENTERED AT 16:20:15 ON 24 APR 2007
L75           1 S 7439-95-4/RN

     FILE 'HCAPLUS' ENTERED AT 16:20:15 ON 24 APR 2007
L76       225614 S L75
L77      1851503 S ( L76 OR L74 OR L72 OR L70 OR L68 OR L66 OR L64 OR L62 OR L60
L78      1784127 S  (7439-95-4 OR  7439-96-5 OR  7440-09-7 OR  7440-23-5 OR  744
L79         5451 S (17375-37-0 OR   22839-47-0 OR   56038-13-2 OR  87419-56-5 OR

     FILE 'STNGUIDE' ENTERED AT 16:21:18 ON 24 APR 2007

     FILE 'HCAPLUS' ENTERED AT 16:22:26 ON 24 APR 2007

     FILE 'STNGUIDE' ENTERED AT 16:23:52 ON 24 APR 2007

     FILE 'HCAPLUS' ENTERED AT 16:29:06 ON 24 APR 2007

     FILE 'HCAPLUS' ENTERED AT 16:30:14 ON 24 APR 2007
L80           1 S L1 AND L46
L81           1 S L76 AND L1
L82           1 S L77 AND L1
L83           1 S L78 AND L1
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L84           1 S L79 AND L1

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     FILE 'STNGUIDE' ENTERED AT 16:34:19 ON 24 APR 2007
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L86           0 S (159640-28-5 OR 532945-75-8 OR 532945-76-9)

     FILE 'HCAPLUS' ENTERED AT 16:36:25 ON 24 APR 2007
L87          46 S (159640-28-5 OR 532945-75-8 OR 532945-76-9)/RN
L88           3 S L87 AND MINERAL
L89          43 S L87 NOT L88
L90           4 S L87 AND VITAMIN?
L91       83216 S L87 AND VITAMIN? OR COSMET?
L92          13 S L87 AND (VITAMIN? OR COSMET? )
L93          10 S L92 NOT L88

     FILE 'STNGUIDE' ENTERED AT 16:42:25 ON 24 APR 2007
L94           0 S L89 NOT (L93 OR L87)

     FILE 'HCAPLUS' ENTERED AT 16:43:12 ON 24 APR 2007
L95           0 S L89 NOT (L93 OR L87)
L96          33 S L89 NOT L92
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L96 ANSWER 1 OF 33 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2007:350863 HCAPLUS <<LOGINID::20070424>>
DOCUMENT NUMBER: 146:337132
TITLE: Immunomodulating agent in gut
INVENTOR(S): Hino, Keiko; Kurose, Mayumi; Sakurai, Takeo; Inoue, Shinichiro; Ogawa, Tohru; Oku, Kazuyuki; Chaen, Hiroto; Fukuda, Shigeharu
PATENT ASSIGNEE(S): Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Japan
SOURCE: PCT Int. Appl., 22pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

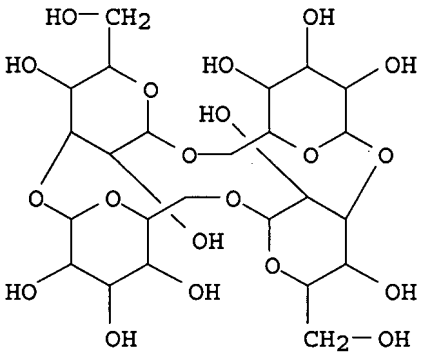
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2007034748	A1	20070329	WO 2006-JP318390	20060915

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

PRIORITY APPLN. INFO.: JP 2005-275360 A 20050922

AB Discloses is an immunomodulating agent in the gut, which can be ingested continuously in the daily dietary habit and does not produce any adverse side effect. The immunomodulating agent comprises a cyclic tetrasaccharide as an active ingredient. The cyclic tetrasaccharide promotes production of IgA and/or interferon-γ. Thus, cyclic tetrasaccharide syrup containing cyclo(→6)-α-D-glucopyranosyl-(1→3)-α-D-glucopyranosyl-(1→6)-α-D-glucopyranosyl-(1→3)-α-D-glucopyranosyl-(1→) was prepared from starch with α-amylase (Termamyl 60L), α-isomaltosylglucosaccharide synthase, and α-isomaltosyl transferase. The obtained cyclic tetrasaccharide syrup was combined with other ingredients to give a chewing gum.

IT 159640-28-5P
RL: BPN (Biosynthetic preparation); FFD (Food or feed use); PAC (Pharmacological activity); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
(intestinal immunomodulating agent containing cyclic tetrasaccharide)
RN 159640-28-5 HCAPLUS
CN α-D-Glucopyranose, O-α-D-glucopyranosyl-(1→3)-O-α-D-glucopyranosyl-(1→6)-O-α-D-glucopyranosyl-(1→3)-, cyclic 1,6'''-anhydride (9CI) (CA INDEX NAME)

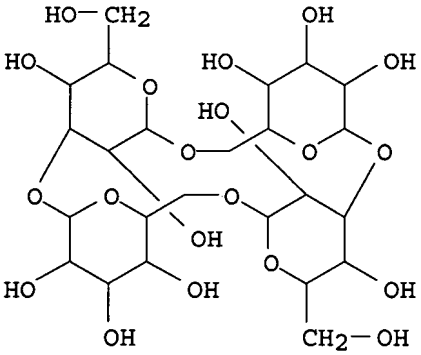


REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

=> d l96 ibib abs hitstr 2-40

L96 ANSWER 2 OF 33 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2006:1184926 HCAPLUS <<LOGINID::20070424>>
DOCUMENT NUMBER: 146:141707
TITLE: Effect of dietary cyclic nigerosylnigerose on intestinal immune functions in mice
AUTHOR(S): Hino, Keiko; Kurose, Mayumi; Sakurai, Takeo; Inoue, Shin-ichiro; Oku, Kazuyuki; Chaen, Hiroto; Kohno, Keizo; Fukuda, Shigeharu
CORPORATE SOURCE: Glycoscience Institute, Research Center, Hayashibara Biochemical Laboratories, Inc., 675-1 Fujisaki, Okayama, 702-8006, Japan
SOURCE: Bioscience, Biotechnology, and Biochemistry (2006), 70(10), 2481-2487
CODEN: BBBIEJ; ISSN: 0916-8451
PUBLISHER: Japan Society for Bioscience, Biotechnology, and Agrochemistry
DOCUMENT TYPE: Journal
LANGUAGE: English
AB We examined the dietary effects of cyclic nigerosylnigerose (CNN), a dietary indigestible oligosaccharide with four D-glucopyranosyl residues linked by alternating α-(1→3)- and α-(1→6) glucosidic linkages, on the intestinal immune function of mice, and the effects were compared with those of α-(1→3)-linked oligosaccharide (nigerooligosaccharides, NOS) or α-(1→6)-linked oligosaccharide (isomaltooligosaccharides, IMO). BALB/c mice were fed with 1-5% CNN, 5% IMO, or 12.5% NOS for 4 wk, and the intestinal mucosal immune responses were determined In the 1-5% CNN fed groups, the amts. of IgA in feces increased significantly. In addition, IgA, transforming growth factor-β1 (TGF-β1), and interleukin-6 (IL-6) secretion by Peyer's patch (PP) cells were enhanced in CNN fed mice. In the 5% CNN group, pH in the cecum decreased, and the amts. of lactic acid and butyric acid increased. These findings were not observed in the NOS- or IMO-fed group of mice. They suggest that CNN supplementation changes the intestinal environment of microflora and indirectly enhances the immune function in the gut.
IT 159640-28-5
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(effect of dietary cyclic nigerosylnigerose on intestinal immune functions in mice)
RN 159640-28-5 HCAPLUS
CN α-D-Glucopyranose, O-α-D-glucopyranosyl-(1→3)-O-α-

D-glucopyranosyl-(1→6)-O-α-D-glucopyranosyl-(1→3)-,
cyclic 1,6'''-anhydride (9CI) (CA INDEX NAME)



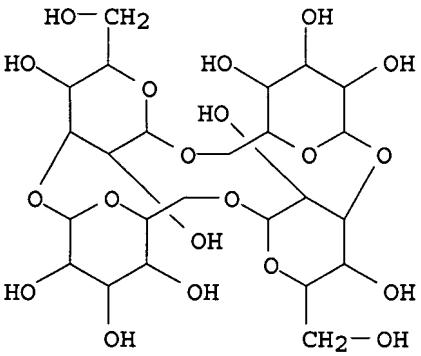
REFERENCE COUNT: 32 THERE ARE 32 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 3 OF 33 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2006:880472 HCAPLUS <<LOGINID::20070424>>
DOCUMENT NUMBER: 145:334157
TITLE: Discovery of two cyclic tetrasaccharides synthesizing systems from starch
AUTHOR(S): Nishimoto, Tomoyuki; Oku, Kazuyuki; Mukai, Kazuhisa
CORPORATE SOURCE: Hayashibara Biochemical Laboratories, Inc., Japan
SOURCE: Kagaku to Seibutsu (2006), 44(8), 539-550
CODEN: KASEAA; ISSN: 0453-073X
PUBLISHER: Gakkai Shuppan Senta
DOCUMENT TYPE: Journal; General Review
LANGUAGE: Japanese

AB A review on the history of the starch saccharification products, structure and synthesis of cyclic oligosaccharides, enzymic synthesis of cyclic nigerosylnigerose (CNN) from alternan and starch, CNN biosynthetic enzymes of Bacillus globisporus, structure of CNN-related gene cluster, conditions of CNN formation, cyclic maltosylmaltose (CMM)-forming system in Arthrobacter globiformis, anal. of a novel maltosyltransferase gene, physiol. importance of cyclic oligosaccharides in bacteria, physicochem. characteristics of CNN and CMM, biol. activities of CNN, and future prospect.

IT 159640-28-5P
RL: BPN (Biosynthetic preparation); BSU (Biological study, unclassified); PRP (Properties); BIOL (Biological study); PREP (Preparation)
(enzymic synthesis of cyclic tetrasaccharides and their application)

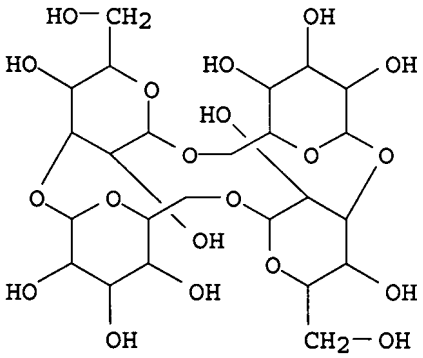
RN 159640-28-5 HCAPLUS
CN α-D-Glucopyranose, O-α-D-glucopyranosyl-(1→3)-O-α-D-glucopyranosyl-(1→6)-O-α-D-glucopyranosyl-(1→3)-, cyclic 1,6'''-anhydride (9CI) (CA INDEX NAME)



L96 ANSWER 4 OF 33 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2006:770398 HCAPLUS <<LOGINID::20070424>>
DOCUMENT NUMBER: 146:330010
TITLE: Inhibitory effect of cyclic tetrasaccharide on DMH-induced colon carcinoma in rats
AUTHOR(S): Oku, Kazuyuki; Sugawa-Katayama, Yohko
CORPORATE SOURCE: Amase Institute, Hayashibara Biochemical Laboratories, Inc., Japan
SOURCE: Shoka to Kyushu (2006), Volume Date 2005, 28(2), 27-34
CODEN: SHKYEZ; ISSN: 0389-3626
PUBLISHER: Nippon Shoka Kyushu Gakkai
DOCUMENT TYPE: Journal
LANGUAGE: Japanese

AB Inhibitory effects of a cyclic tetrasaccharides (CTS) on 1,2-dimethylhydrazine (DMH)-induced colon carcinoma were investigated in rats. Male Fischer-strain rats were fed a diet containing CTS or the control diet for 4 wk. A dose of 20mg DMH/kg body weight was s.c. injected on the back of the rats twice a week. The activity of β-glucuronidase in the cecal contents and the concentration of 8-hydroxydeoxyguanosine (8-OHdG) in the urine or in the serum were determined as carcinogenesis markers. The β-glucuronidase activity in the DMH-treated rats fed the CTS diet was 0.54 units/g cecal contents, showing a significant decrement in comparison with the corresponding value(1.61 units/g) in the DMH-treated control rats. The urine 8-OHdG concentration also decreased significantly in the DMH-treated rats fed the CTS diet in comparison with the DMH-treated rats fed the control diet. Judging from significantly lower concns. of cecal deoxycholic acid, the ratio of primary to secondary bile acids in the DMH-treated rats fed the CTS diet was higher than in the DMH-treated control rats. The above results suggest an inhibitory effect of CTS on DMH-induced colon carcinoma during the initiation period in the rat.

IT 159640-28-5
RL: PAC (Pharmacological activity); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(inhibitory effect of cyclic tetrasaccharide on DMH-induced colon carcinoma in rats)
RN 159640-28-5 HCAPLUS
CN α-D-Glucopyranose, O-α-D-glucopyranosyl-(1→3)-O-α-D-glucopyranosyl-(1→6)-O-α-D-glucopyranosyl-(1→3)-, cyclic 1,6'''-anhydride (9CI) (CA INDEX NAME)

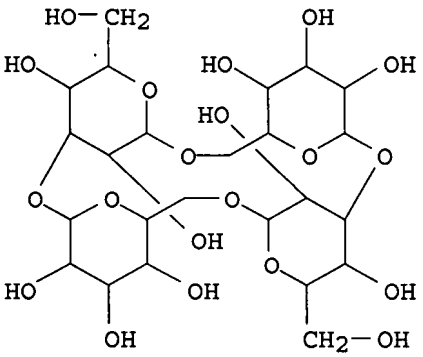


L96 ANSWER 5 OF 33 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2006:49889 HCAPLUS <<LOGINID::20070424>>
DOCUMENT NUMBER: 145:55832
TITLE: Cyclic Tetrasaccharide Delays Cataract Formation in the Lens In Vitro
AUTHOR(S): Matsuo, Toshihiko
CORPORATE SOURCE: Department of Ophthalmology, Okayama University Graduate School of Medicine, Dentistry, and Pharmaceutical Sciences, Okayama City, Japan
SOURCE: Cell Preservation Technology (2005), 3(4), 238-243
CODEN: CPTECY; ISSN: 1538-344X
PUBLISHER: Mary Ann Liebert, Inc.
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The aim of this study was to test whether cyclic tetrasaccharide could prevent cataract formation in isolated porcine lenses in vitro. Porcine eyes were cut at the midperiphery with a razor blade and pressure was applied to the globe to eject the lens without touching. The isolated lenses were then washed with saline and transferred with a spoon to wells of a 24-well multidish with a lid. The lenses were incubated in saline, 1, 10, 20, 50, 75, and 100 mM trehalose or cyclic tetrasaccharide in saline for 40 days at room temperature and in room humidity. Solution change or aeration was not done during the period. The lenses were observed with a dissecting microscope with transmitting light source and the images of the lenses were captured through a CCD camera into a computer. The lens opacity was measured as mean d. in a circle area placed inside the lens. Cyclic tetrasaccharide at 75 mM and 100 mM concns. significantly delayed the development of lens opacity compared with saline, trehalose at any concns., and cyclic tetrasaccharide at 50 mM or lower concns. over the course of 40 days. The lenses in 100 mM cyclic tetrasaccharide showed transient surface opacity on the initial phase of incubation up to 5 days and then became transparent. In conclusion, cyclic tetrasaccharide delays the development of lens opacity in vitro. Cyclic tetrasaccharide might be used as a cataract-delaying agent.

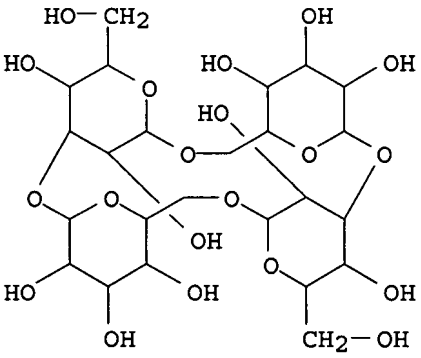
IT 159640-28-5
RL: PAC (Pharmacological activity); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(cyclic tetrasaccharide delay development of lens opacity in porcine eye and suggests that cyclic tetrasaccharide might be used as cataract-delaying agent)

RN 159640-28-5 HCAPLUS
CN α-D-Glucopyranose, O-α-D-glucopyranosyl-(1→3)-O-α-D-glucopyranosyl-(1→6)-O-α-D-glucopyranosyl-(1→3)-, cyclic 1,6'''-anhydride (9CI) (CA INDEX NAME)



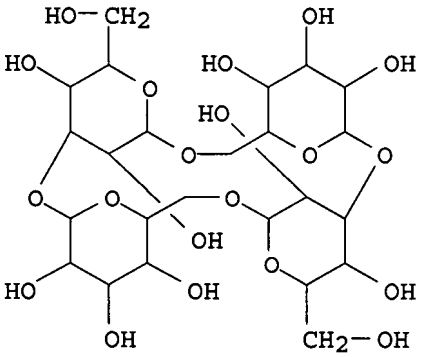
REFERENCE COUNT: 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 6 OF 33 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2005:1207191 HCAPLUS <<LOGINID::20070424>>
DOCUMENT NUMBER: 144:102792
TITLE: Glycosylation of internal sugar residues of oligosaccharides catalyzed by α-galactosidase from Aspergillus fumigatus
AUTHOR(S): Puchart, Vladimir; Biely, Peter
CORPORATE SOURCE: Institute of Chemistry, Slovak Academy of Sciences, Bratislava, SK-845 38, Slovakia
SOURCE: Biochimica et Biophysica Acta, General Subjects (2005), 1726(2), 206-216
CODEN: BBGSB3; ISSN: 0304-4165
PUBLISHER: Elsevier B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Purified α-galactosidase from a thermotolerant fungus Aspergillus fumigatus IMI 385708 was found to catalyze efficiently transgalactosylation reactions using 4-nitrophenyl α-D-galactopyranoside as glycosyl donor. Self-transfer reactions with this substrate afforded in low yields several 4-nitrophenyl galactobiosides. Monosaccharides also served as poor glycosyl acceptors. Disaccharides and particularly higher oligosaccharides of α-1,4-gluco- (maltooligosaccharides), β-1,4-gluco- (cellooligosaccharides) and β-1,4-manno-series were efficiently galactosylated, the latter being the best acceptors that were also doubly galactosylated. With mannooligosaccharides product yields increased with polymerization degree of acceptors reaching 50% at DP of 4-6. Longer oligosaccharide acceptors were galactosylated at internal sugar residues. All galactosyl residues were transferred exclusively to the primary hydroxyl group(s) at C-6 position of oligosaccharide acceptors. This is in accordance with the inability of the enzyme to transfer galactose to β-1,4-linked xylooligosaccharides. This is the first report of glycosyl transfer reaction to internal sugar residues of oligosaccharides catalyzed by a glycosidase. High affinity to oligosaccharide acceptors also opens a way toward enzymic glycosylation of polysaccharides, thus modulating their physico-chemical and biol. properties.
IT 159640-28-5
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(glycosylation of internal sugar residues of oligosaccharides catalyzed by α-galactosidase from Aspergillus fumigatus)
RN 159640-28-5 HCAPLUS
CN α-D-Glucopyranose, O-α-D-glucopyranosyl-(1→3)-O-α-D-glucopyranosyl-(1→6)-O-α-D-glucopyranosyl-(1→3)-, cyclic 1,6'''-anhydride (9CI) (CA INDEX NAME)



REFERENCE COUNT: 38 THERE ARE 38 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 7 OF 33 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2005:704709 HCAPLUS <<LOGINID::20070424>>
DOCUMENT NUMBER: 143:326526
TITLE: Identification of bound water molecules in the cyclic tetrasaccharide, cyclo-{→6}-α-D-Glcp-(1→3)-α-D-Glcp-(1→6)-α-D-Glcp-(1→3)-α-D-Glcp-(1→)
AUTHOR(S): Furihata, Kazuo; Fujimoto, Takashi; Tsutsui, Ayumi; Machinami, Tomoya; Tashiro, Mitsuru
CORPORATE SOURCE: Division of Agriculture and Agricultural Life Sciences, The University of Tokyo, Bunkyo-ku, Tokyo, Yayoi, 113-8657, Japan
SOURCE: Carbohydrate Research (2005), 340(12), 2060-2063
CODEN: CRBRAT; ISSN: 0008-6215
PUBLISHER: Elsevier B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A structural characterization of bound water mols. in the cyclic tetrasaccharide, cyclo-{→6}-α-D-Glcp-(1→3)-α-D-Glcp-(1→6)-α-D-Glcp-(1→3)-α-D-Glcp-(1→), was carried out by NMR spectroscopy. H-1', 2'-OH, H-3', and 4'-OH of the 3-O-glycosylated residue and H-1 of the 6-O-glycosylated residue were found to cross-relax with protons of bound waters using the double-pulsed field-gradient spin-echo ROESY experiment In the crystal structure, one water mol. is located in the center of the plate, and its temperature factor is very low, indicating that this water mol. is an intrinsic component.
IT 159640-28-5
RL: PRP (Properties)
(of bound water mols. in the cyclic tetrasaccharide, cyclo-{→6}-α-D-Glcp-(1→3)-α-D-Glcp-(1→6)-α-D-Glcp-(1→3)-α-D-Glcp-(1→))
RN 159640-28-5 HCAPLUS
CN α-D-Glucopyranose, O-α-D-glucopyranosyl-(1→3)-O-α-D-glucopyranosyl-(1→6)-O-α-D-glucopyranosyl-(1→3)-, cyclic 1,6'''-anhydride (9CI) (CA INDEX NAME)



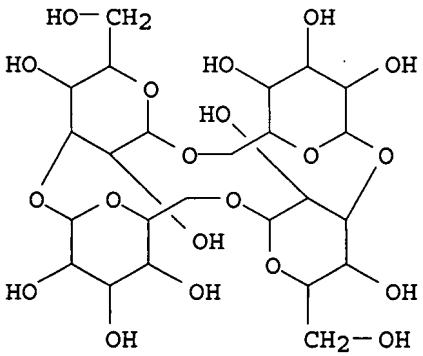
REFERENCE COUNT: 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 8 OF 33 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2005:503693 HCAPLUS <<LOGINID::20070424>>
DOCUMENT NUMBER: 143:211004
TITLE: Suppressive effect of cyclic tetrasaccharide on body fat accumulation
AUTHOR(S): Oku, Kazuyuki; Shibuya, Takashi
CORPORATE SOURCE: Amase Inst., Hayashibara Biochem. Lab., Inc., Okayama, 700-0834, Japan
SOURCE: Baiosaiensu to Indasutori (2005), 63(5), 324-325
CODEN: BIDSE6; ISSN: 0914-8981
PUBLISHER: Baioindasutori Kyokai
DOCUMENT TYPE: Journal; General Review
LANGUAGE: Japanese

AB A review on the mechanism of formation of a cyclic tetrasaccharide (CTS), cyclo[→6)-α-D-glucopyranosyl-(1→3)-α-D-glucopyranosyl-(1→6)-α-D-glucopyranosyl-(1→3)-α-D-glucopyranosyl-(1→], from α-1,4-glucan with 6-α-glucosyltransferase and α-isomaltosyltransferase from Bacillus globisporus C11, enzymic manufacture of CTS from starch with enzymes from B. globisporus N75, properties of CTS, and body fat accumulation-preventing actions involving interaction with bile acids of CTS.

IT 159640-28-5P
RL: BMF (Bioindustrial manufacture); BPN (Biosynthetic preparation); BSU (Biological study, unclassified); BIOL (Biological study); PREP (Preparation)
(suppressive effect of cyclic tetrasaccharide manufactured with enzymes from Bacillus globisporus on body fat accumulation)

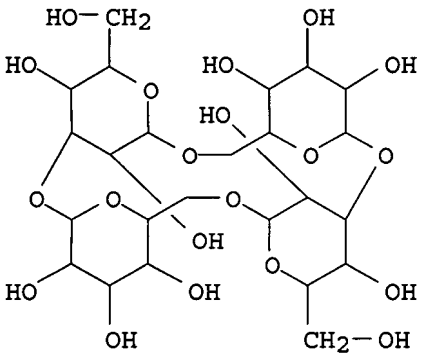
RN 159640-28-5 HCAPLUS
CN α-D-Glucopyranose, O-α-D-glucopyranosyl-(1→3)-O-α-D-glucopyranosyl-(1→6)-O-α-D-glucopyranosyl-(1→3)-, cyclic 1,6'''-anhydride (9CI) (CA INDEX NAME)



L96 ANSWER 9 OF 33 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2005:87285 HCAPLUS <<LOGINID::20070424>>
DOCUMENT NUMBER: 142:331714
TITLE: Enzymatic synthesis of a 2-O-α-D-glucopyranosyl cyclic tetrasaccharide by kojibiose phosphorylase
AUTHOR(S): Watanabe, Hikaru; Higashiyama, Takanobu; Aga, Hajime; Nishimoto, Tomoyuki; Kubota, Michio; Fukuda, Shigeharu; Kurimoto, Masashi; Tsujisaka, Yoshio
CORPORATE SOURCE: Amase Institute, Hayashibara Biochemical Laboratories, Inc., Okayama, 700-0834, Japan
SOURCE: Carbohydrate Research (2005), 340(3), 449-454
CODEN: CRBRAT; ISSN: 0008-6215
PUBLISHER: Elsevier B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English
OTHER SOURCE(S): CASREACT 142:331714

AB The glucosyl transfer reaction of kojibiose phosphorylase (KPase) from Thermoanaerobacter brockii ATCC35047 was examined using cyclo-[→6)-α-D-Glcp-(1→3)-α-D-Glcp-(1→6)-α-D-Glcp-(1→3)-α-D-Glcp-(1→] (CTS) as an acceptor. KPase produced four transfer products, saccharides 1-4. The structure of a major product, saccharide 4, was 2-O-α-D-glucopyranosyl-CTS, cyclo-{→6)-α-D-Glcp-(1→3)-α-D-Glcp-(1→6)-[α-D-Glcp-(1→2)]-α-D-Glcp-(1→3)-α-D-Glcp-(1→}. The other transfer products, saccharides 1-3, were 2-O-α-kojibiosyl-, 2-O-α-kojitriosyl-, and 2-O-α-kojitetraosyl-CTS, resp. These results showed that KPase transferred a glucose residue to the C-2 position at the ring glucose residue of CTS. This enzyme also catalyzed the chain-extending reaction of the side chain of 2-O-α-D-glycopyranosyl-CTS.

IT 159640-28-5
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(acceptor substrate; 2-O-α-D-glucopyranosyl cyclic tetrasaccharides biosynthesis by kojibiose phosphorylase)
RN 159640-28-5 HCAPLUS
CN α-D-Glucopyranose, O-α-D-glucopyranosyl-(1→3)-O-α-D-glucopyranosyl-(1→6)-O-α-D-glucopyranosyl-(1→3)-, cyclic 1,6'''-anhydride (9CI) (CA INDEX NAME)

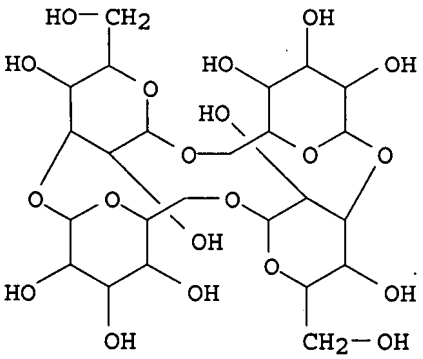


REFERENCE COUNT: 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 10 OF 33 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2005:33236 HCAPLUS <<LOGINID::20070424>>
DOCUMENT NUMBER: 142:112867
TITLE: Method and agents for stabilization of isothiocyanates using specific oligosaccharides, and foods containing the stabilized isothiocyanates
INVENTOR(S): Saito, Noriyuki; Oku, Kazuyuki; Kubota, Norio; Miyake, Toshio
PATENT ASSIGNEE(S): Hayashibara Biochemical Laboratories, Inc., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 12 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005006579	A	20050113	JP 2003-175725	20030620

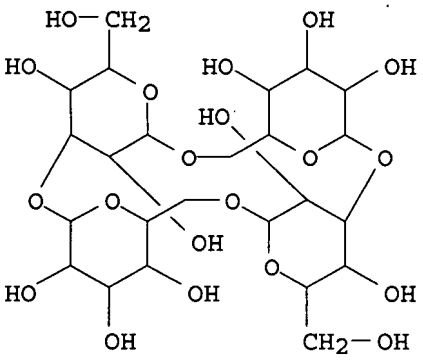
PRIORITY APPLN. INFO.: JP 2003-175725 20030620
OTHER SOURCE(S): MARPAT 142:112867
AB Isothiocyanates, which are contained in and/or added to foods as pungent components, are stabilized by addition of ≥1 selected from α-glycosyl-α,α-trehalose, isomaltitol, and cyclo(→6)-α-D-glucopyranosyl-(1→3)-α-D-glucopyranosyl-(1→6)-α-D-glucopyranosyl-(1→3)-α-D-glucopyranosyl. An a paste containing allyl isothiocyanate (I) and α-maltosyl-α,α-trehalose (II; preparation given) was stored in a glass vial at 40° for 24 h to show remaining rate of I 62%. Mustard-flavored mayonnaise containing II was also formulated.
IT 159640-28-5
RL: FFD (Food or feed use); MOA (Modifier or additive use); BIOL (Biological study); USES (Uses)
(stabilization of isothiocyanates using specific oligosaccharides, and foods containing the stabilized isothiocyanates)
RN 159640-28-5 HCAPLUS
CN α-D-Glucopyranose, O-α-D-glucopyranosyl-(1→3)-O-α-D-glucopyranosyl-(1→6)-O-α-D-glucopyranosyl-(1→3)-, cyclic 1,6'''-anhydride (9CI) (CA INDEX NAME)



L96 ANSWER 11 OF 33 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2005:11563 HCAPLUS <<LOGINID::20070424>>
DOCUMENT NUMBER: 143:367467
TITLE: Enzymatic synthesis of glycosyl cyclic tetrasaccharide with 6-α-Glucosyltransferase and 3-α-Isomaltosyltransferase
AUTHOR(S): Aga, Hajime; Higashiyama, Takanobu; Watanabe, Hikaru; Sonoda, Tomohiko; Yuen, Ritsuko; Nishimoto, Tomoyuki; Kubota, Michio; Fukuda, Shigeharu; Kurimoto, Masashi; Tsujisaka, Yoshio
CORPORATE SOURCE: Amase Institute, Hayashibara Biochemical Laboratories, Inc., Okayama, 700-0834, Japan
SOURCE: Journal of Bioscience and Bioengineering (2004), 98(4), 287-292
CODEN: JBBIF6; ISSN: 1389-1723
PUBLISHER: Society for Biotechnology, Japan
DOCUMENT TYPE: Journal
LANGUAGE: English
OTHER SOURCE(S): CASREACT 143:367467

AB Transglycosylation reactions to cyclic tetrasaccharide (CTS, cyclo{(→6)-α-D-Glcp-(1→3)-α-D-Glcp-(1→6)-α-D-Glcp-(1→3)-α-D-Glcp-(1→)}) and its derivs. were investigated. An enzyme, 6-α-glucosyltransferase, which is involved in CTS synthesis from starch, from Bacillus globisporus C11 produced 4-O-α-glucosyl-CTS (4G-CTS) from a mixture containing CTS and maltopentaose. Another enzyme, 3-α-isomaltosyltransferase, synthesized 3-O-α-isomaltosyl-CTS (3IM-CTS) from CTS and panose. Two novel branched CTSs, 3-O-α-isomaltosyl-4-O-α-glucosyl-CTS (3IM-4G-CTS) and 3-O-α-isomaltosyl-(4-O-α-glucosyl)-CTS [3IM-(4G)-CTS], were synthesized by the isomaltosyl transfer of IMT into 4G-CTS. IMT also produced a novel saccharide, 3-O-α-isomaltosyl-3-O-α-isomaltosyl-CTS (3IM-3IM-CTS) from 3IM-CTS. It was confirmed that the oligosaccharides, including 4G-CTS, 3IM-CTS, 3IM-4G-CTS, 3IM-(4G)-CTS and 3IM-3IM-CTS, remaining in the reaction mixture during the production of CTS from starch were the transfer products of 6GT and IMT into CTS.

IT 159640-28-5
RL: RCT (Reactant); RACT (Reactant or reagent)
(enzymic synthesis of glycosyl cyclic tetrasaccharide with 6-α-Glucosyltransferase and 3-α-Isomaltosyltransferase)
RN 159640-28-5 HCAPLUS
CN α-D-Glucopyranose, O-α-D-glucopyranosyl-(1→3)-O-α-D-glucopyranosyl-(1→6)-O-α-D-glucopyranosyl-(1→3)-, cyclic 1,6'''-anhydride (9CI) (CA INDEX NAME)



REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 12 OF 33 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2004:878404 HCAPLUS <<LOGINID::20070424>>
DOCUMENT NUMBER: 141:355386
TITLE: Lipid-regulating agent containing cyclic tetrasaccharide and use thereof
INVENTOR(S): Oku, Kazuyuki; Kubota, Michio; Fukuda, Shigeharu; Miyake, Toshio
PATENT ASSIGNEE(S): Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Japan; Hayashibara Biochem Lab.
SOURCE: PCT Int. Appl., 52 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

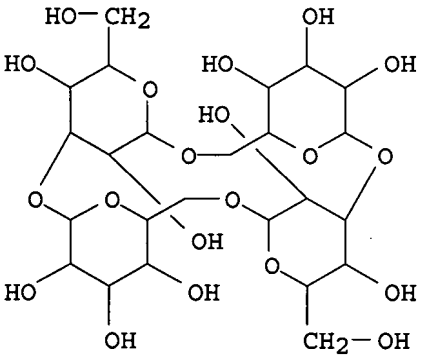
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004089964	A1	20041021	WO 2004-JP4079	20040324
WO 2004089964	A8	20041229		
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
EP 1616873	A1	20060118	EP 2004-722989	20040324
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK				
CN 1768071	A	20060503	CN 2004-80008626	20040324
US 2006276432	A1	20061207	US 2005-551765	20051003
PRIORITY APPLN. INFO.:			JP 2003-100408 A	20030403
			WO 2004-JP4079 W	20040324

AB Disclosed are a lipid-regulating agent and a composition for lipid control which contains the lipid-regulating agent. The lipid-regulating agent comprises as an active ingredient a cyclic tetrasaccharide and/or a glucide derivative thereof. A compound cyclo[α-D-glucopyranosyl-(1→3)-α-D-glucopyranosyl-(1→6)-α-D-glucopyranosyl-(1→3)-α-D-glucopyranosyl-(1→6)] (I) was

prepared from corn starch. Rats were fed with a deit containing I to examine the blood lipids and organ fats. Also, a table sugar was prepared from I·pentahydrate 50, maltitol 46, processed hesperidin (αGhesperidin) 3, sucralose 1, and water 200 parts.

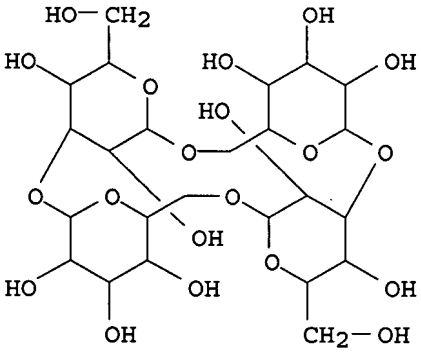
IT 532945-75-8P 532945-76-9P
RL: BPN (Biosynthetic preparation); BSU (Biological study, unclassified); FFD (Food or feed use); NPO (Natural product occurrence); THU (Therapeutic use); BIOL (Biological study); OCCU (Occurrence); PREP (Preparation); USES (Uses)
(lipid-regulating agent containing cyclic tetrasaccharide and use thereof)

RN 532945-75-8 HCAPLUS
CN α-D-Glucopyranose, O-α-D-glucopyranosyl-(1→3)-O-α-D-glucopyranosyl-(1→6)-O-α-D-glucopyranosyl-(1→3)-, cyclic 1,6'''-anhydride, monohydrate (9CI) (CA INDEX NAME)



● H_2O

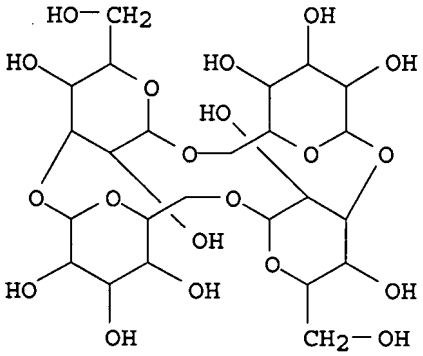
RN 532945-76-9 HCAPLUS
CN α-D-Glucopyranose, O-α-D-glucopyranosyl-(1→3)-O-α-D-glucopyranosyl-(1→6)-O-α-D-glucopyranosyl-(1→3)-, cyclic 1,6'''-anhydride, pentahydrate (9CI) (CA INDEX NAME)



●5 H_2O

IT 159640-28-5

RL: BSU (Biological study, unclassified); FFD (Food or feed use); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(lipid-regulating agent containing cyclic tetrasaccharide and use thereof)
RN 159640-28-5 HCAPLUS
CN α-D-Glucopyranose, O-α-D-glucopyranosyl-(1→3)-O-α-D-glucopyranosyl-(1→6)-O-α-D-glucopyranosyl-(1→3)-, cyclic 1,6'''-anhydride (9CI) (CA INDEX NAME)



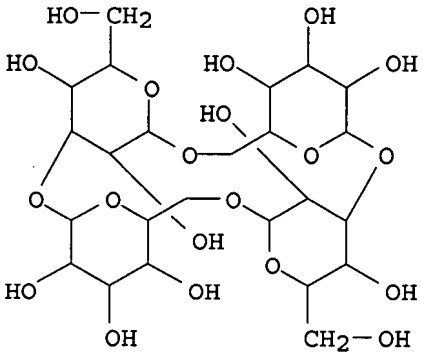
REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 13 OF 33 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2004:700515 HCAPLUS <<LOGINID::20070424>>
DOCUMENT NUMBER: 141:227149
TITLE: Manufacture of nigerose acetate, nigerose, and nigeritol in high yield
INVENTOR(S): Aga, Hajime; Kubota, Norio; Fukuda, Shigeharu; Miyake, Toshio
PATENT ASSIGNEE(S): Hayashibara Biochemical Laboratories, Inc., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 15 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

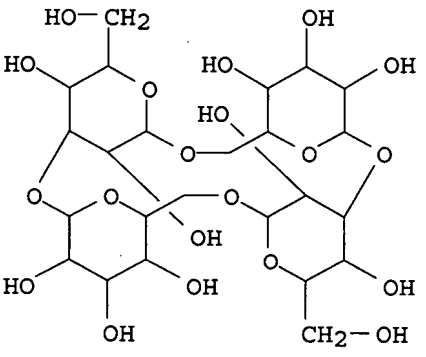
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004238287	A	20040826	JP 2003-25713	20030203

PRIORITY APPLN. INFO.: JP 2003-25713 20030203
OTHER SOURCE(S): CASREACT 141:227149; MARPAT 141:227149
AB Nigerose acetate is manufactured by acetolysis of cyclo[(→6)-α-D-glucopyranosyl-(1→3)-α-D-glucopyranosyl-(1→6)-α-D-glucopyranosyl-(1→3)-α-D-glucopyranosyl-(1→)] (I) in contact with acetate ion and extraction Nigerose is manufactured by deacetylation of the nigerose acetate. Nigeritol is manufactured by hydrogenation of the nigerose. Thus, acetolysis of I in the presence of acetic anhydride and acetic acid gave a nigerose acetate-rich product in 180% yield. Deacetylation of the nigerose acetate-rich product gave a product containing 45% nigerose and other sugars. Hydrogenation of concentrated nigerose-rich product gave a product containing 96% nigeritol and other sugar alcs.
IT 159640-28-5P
RL: BYP (Byproduct); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(manufacture of nigerose acetate, nigerose, and nigeritol in high yield)
RN 159640-28-5 HCAPLUS

CN α-D-Glucopyranose, O-α-D-glucopyranosyl-(1→3)-O-α-D-glucopyranosyl-(1→6)-O-α-D-glucopyranosyl-(1→3)-, cyclic 1,6'''-anhydride (9CI) (CA INDEX NAME)



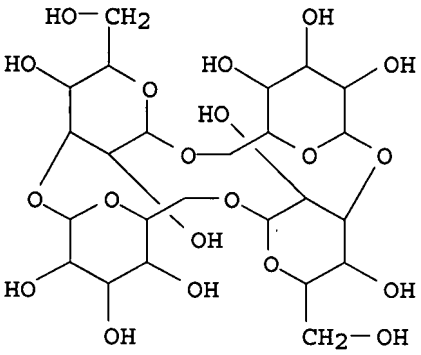
L96 ANSWER 14 OF 33 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2004:465656 HCAPLUS <<LOGINID::20070424>>
DOCUMENT NUMBER: 141:362256
TITLE: Purification and characterization of an intracellular cycloalternan-degrading enzyme from Bacillus sp. NRRL B-21195. [Erratum to document cited in CA141:049446]
AUTHOR(S): Kim, Yeon-Kye; Kitaoka, Motomitsu; Hayashi, Kiyoshi; Kim, Cheorl-Ho; Cote, Gregory L.
CORPORATE SOURCE: Enzyme Laboratory, National Food Research Institute, Ibaraki, Tsukuba, 305-8642, Japan
SOURCE: Carbohydrate Research (2004), 339(9), 1663
CODEN: CRBRAT; ISSN: 0008-6215
PUBLISHER: Elsevier
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The paper was incorrectly listed as a "Note" rather than a "Full paper".
IT 159640-28-5, α-D-Glucopyranose, O-α-D-glucopyranosyl-(1→3)-O-α-D-glucopyranosyl-(1→6)-O-α-D-glucopyranosyl-(1→3)-
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(cycloalternan; purification and characterization of intracellular cycloalternan isomaltosylhydrolase from Bacillus (Erratum))
RN 159640-28-5 HCAPLUS
CN α-D-Glucopyranose, O-α-D-glucopyranosyl-(1→3)-O-α-D-glucopyranosyl-(1→6)-O-α-D-glucopyranosyl-(1→3)-, cyclic 1,6'''-anhydride (9CI) (CA INDEX NAME)



L96 ANSWER 15 OF 33 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2004:465648 HCAPLUS <<LOGINID::20070424>>
DOCUMENT NUMBER: 141:202137
TITLE: Enzymatic synthesis of a β-D-galactopyranosyl cyclic tetrasaccharide by β-galactosidases
AUTHOR(S): Higashiyama, Takanobu; Watanabe, Hikaru; Aga, Hajime; Nishimoto, Tomoyuki; Kubota, Michio; Fukuda, Shigeharu; Kurimoto, Masashi; Tsujisaka, Yoshio
CORPORATE SOURCE: Amase Institute, Hayashibara Biochemical Laboratories, Inc., Okayama, 700-0834, Japan
SOURCE: Carbohydrate Research (2004), 339(9), 1603-1608
CODEN: CRBRAT; ISSN: 0008-6215
PUBLISHER: Elsevier
DOCUMENT TYPE: Journal
LANGUAGE: English
OTHER SOURCE(S): CASREACT 141:202137

AB The galactosyl transfer reaction to cyclo-(→6)-α-D-Glcp-(1→3)-α-D-Glcp-(1→6)-α-D-Glcp-(1→3)-α-D-Glcp-(1→) (CTS) was examined using lactose as a donor and β-galactosidases from Aspergillus oryzae and Bacillus circulans. The A. oryzae β-galactosidase produced three galactosyl derivs. of CTS. The main galactosyl derivative produced by the A. oryzae enzyme was identified as 6-O-β-D-galactopyranosyl-CTS, cyclo-(→6)-α-D-Glcp-(1→3)-[β-d-Galp-(1→6)]-α-D-Glcp-(1→6)-α-D-Glcp-(1→3)-α-D-Glcp-(1→). The B. circulans β-galactosidase also synthesized three galactosyl-transfer products to CTS. The structure of main transgalactosylation product was 3-O-β-D-galactopyranosyl-CTS, cyclo-(→6)-α-D-Glcp-(1→3)-α-D-Glcp-(1→6)-[β-D-Galp-(1→3)]-α-D-Glcp-(1→3)-α-D-Glcp-(1→). These results showed that β-galactosidase transferred galactose directly to the ring glucose residue of CTS.

IT 159640-28-5
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(enzymic synthesis of β-D-galactopyranosyl cyclic tetrasaccharide by β-galactosidases)
RN 159640-28-5 HCAPLUS
CN α-D-Glucopyranose, O-α-D-glucopyranosyl-(1→3)-O-α-D-glucopyranosyl-(1→6)-O-α-D-glucopyranosyl-(1→3)-, cyclic 1,6'''-anhydride (9CI) (CA INDEX NAME)

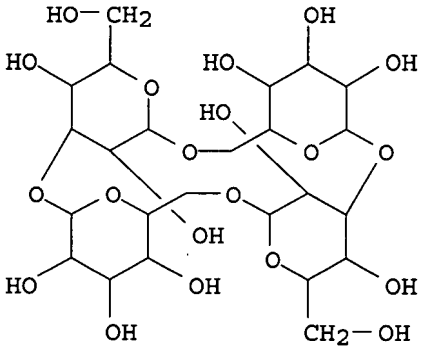


REFERENCE COUNT: 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 16 OF 33 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2004:277681 HCAPLUS <<LOGINID::20070424>>
DOCUMENT NUMBER: 141:49446
TITLE: Purification and characterization of an intracellular cycloalternan-degrading enzyme from Bacillus sp. NRRL B-21195
AUTHOR(S): Kim, Yeon-Kye; Kitaoka, Motomitsu; Hayashi, Kiyoshi; Kim, Cheorl-Ho; Cote, Gregory L.
CORPORATE SOURCE: Enzyme Laboratory, National Food Research Institute, Ibaraki, Tsukuba, 305-8642, Japan
SOURCE: Carbohydrate Research (2004), 339(6), 1179-1184
CODEN: CRBRAT; ISSN: 0008-6215
PUBLISHER: Elsevier
DOCUMENT TYPE: Journal
LANGUAGE: English

AB A novel intracellular cycloalternan-degrading enzyme (CADE) was purified to homogeneity from the cell pellet of Bacillus sp. NRRL B-21195. The enzyme has a mol. mass of 125 kDa on SDS-PAGE. The pH optimum was 7.0, and the enzyme was stable from pH 6.0 to 9.2. The temperature optimum was 35° and the enzyme exhibited stability up to 50°. The enzyme hydrolyzed cycloalternan [CA; cyclo{→6)-α-D-Glcp-(1→3)-α-D-Glcp-(1→6)-α-D-Glcp-(→3)-α-D-Glcp-(1 →}] as the best substrate, to produce only isomaltose via an intermediate, α-isomaltosyl-(1→3)-isomaltose. This enzyme also hydrolyzed isomaltosyl substrates, such as panose, α-isomaltosyl-(1→4)-maltooligosaccharides, α-isomaltosyl-(1→3)-glucose, and α-isomaltosyl-(1→3)-isomaltose to liberate isomaltose. Neither maltooligosaccharides nor isomaltooligosaccharides were hydrolyzed by the enzyme, indicating that CADE requires α-isomaltosyl residues connected with (1→4)- or (1→3)-linkages. The Km value of cycloalternan (1.68 mM) was 20% of that of panose (8.23 mM). The kcat value on panose (14.4 s-1) was not significantly different from that of cycloalternan (10.8 s-1). Judging from its specificity, the systematic name of the enzyme should be cycloalternan isomaltosylhydrolase. This intracellular enzyme is apparently involved in the metabolism of starch via cycloalternan in Bacillus sp. NRRL B-21195, its role being to hydrolyze cycloalternan inside the cells.

IT 159640-28-5
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(cycloalternan; purification and characterization of intracellular cycloalternan isomaltosylhydrolase from Bacillus)
RN 159640-28-5 HCAPLUS
CN α-D-Glucopyranose, O-α-D-glucopyranosyl-(1→3)-O-α-D-glucopyranosyl-(1→6)-O-α-D-glucopyranosyl-(1→3)-, cyclic 1,6'''-anhydride (9CI) (CA INDEX NAME)



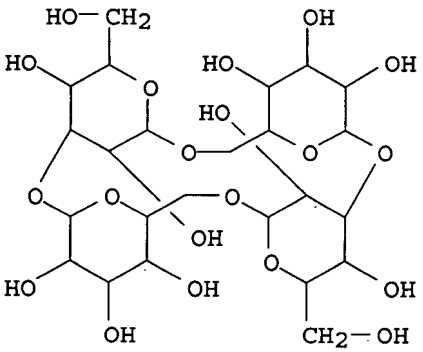
REFERENCE COUNT: 32 THERE ARE 32 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 17 OF 33 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2003:827271 HCAPLUS <<LOGINID::20070424>>
DOCUMENT NUMBER: 140:77343
TITLE: Oxidation and metal-ion affinities of a novel cyclic tetrasaccharide
AUTHOR(S): Dunlap, Christopher A.; Cote, Gregory L.; Momany, Frank A.
CORPORATE SOURCE: Fermentation Biotechnology Research Unit, National Center for Agricultural Utilization Research, Agricultural Research Service, United States Department of Agriculture, Peoria, IL, 61604-3999, USA
SOURCE: Carbohydrate Research (2003), 338(22), 2367-2373
CODEN: CRBRAT; ISSN: 0008-6215
PUBLISHER: Elsevier Ltd.
DOCUMENT TYPE: Journal
LANGUAGE: English
OTHER SOURCE(S): CASREACT 140:77343

AB The cyclic tetrasaccharide, cyclo-{→6)-α-D-Glcp-(1→3)-α-D-Glcp-(1→6)-α-D-Glcp-(1→3)-α-D-Glcp-(1→}, was oxidized in high yield to a dicarboxylic acid, cyclo-{→6)-α-D-Glcp-(1→3)-α-D-GlcpA-(1→6)-α-D-Glcp-(1→3)-α-D-GlcpA-(1→}. The parent and oxidized compound were then screened for the ability to form stable complexes with 20 metal cations. Ion-exchange thin-layer chromatog. was utilized to survey binding in aqueous and 50% methanolic solns. The screening identified Pb2+, Fe2+ and Fe3+ as forming strong metal chelates with the oxidized cyclic tetrasaccharide. The stoichiometry of the oxidized cyclic tetrasaccharide and Pb2+ complex was determined to be 1:1 using aqueous gel-permeation chromatog. Perturbations between the free and complexed structure were examined using NMR spectroscopy. Mol. simulations were used to identify a probable structure of oxidized cyclic tetrasaccharide complexed with Pb2+.

IT 159640-28-5
RL: PRP (Properties); RCT (Reactant); RACT (Reactant or reagent)
(preparation and metal-ion affinities of cyclo-{→6)-α-D-Glcp-(1→3)-α-D-GlcpA-(1→6)-α-D-Glcp-(1→3)-α-D-GlcpA-(1→})

RN 159640-28-5 HCAPLUS
CN α-D-Glucopyranose, O-α-D-glucopyranosyl-(1→3)-O-α-D-glucopyranosyl-(1→6)-O-α-D-glucopyranosyl-(1→3)-, cyclic 1,6'''-anhydride (9CI) (CA INDEX NAME)



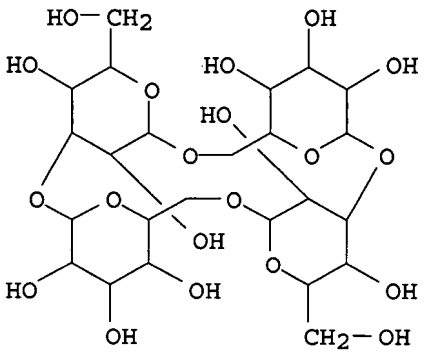
REFERENCE COUNT: 38 THERE ARE 38 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 18 OF 33 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2003:795149 HCAPLUS <<LOGINID::20070424>>
DOCUMENT NUMBER: 140:55383
TITLE: A synergistic reaction mechanism of a cycloalternan-forming enzyme and a D-glucosyltransferase for the production of cycloalternan in Bacillus sp. NRRL B-21195
AUTHOR(S): Kim, Yeon-Kye; Kitaoka, Motomitsu; Hayashi, Kiyoshi; Kim, Cheorl-Ho; Cote, Gregory L.
CORPORATE SOURCE: Enzyme Laboratory, National Food Research Institute, Tsukuba, Ibaraki, 305-8642, Japan
SOURCE: Carbohydrate Research (2003), 338(21), 2213-2220
CODEN: CRBRAT; ISSN: 0008-6215
PUBLISHER: Elsevier Ltd.
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Cycloalternan-forming enzyme (CAFE) was first described as the enzyme that produced cycloalternan from alternan. In this study, the authors found that a partially purified preparation of CAFE containing two proteins catalyzed the synthesis of cycloalternan from maltooligosaccharides, whereas the purified CAFE alone was unable to do so. In addition to the 117-kDa CAFE itself, the mixture also contained a 140-kDa protein. The latter was found to be a disproportionating enzyme (DE) that catalyzes transfer of a D-glucopyranosyl residue from the non-reducing end of one maltooligosaccharide to the non-reducing end of another, forming an isomaltosyl residue at the non-reducing end. CAFE then transfers the isomaltosyl residue to the non-reducing end of another isomaltosyl maltooligosaccharide, to form an α-isomaltosyl-(1 3)-α-isomaltosyl-(1 4)-maltooligosaccharide, and subsequently catalyzes a cyclization to produce cycloalternan. Thus, DE and CAFE act synergistically to produce cycloalternan directly from maltodextrin or starch.

IT 159640-28-5
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(purification and properties and synergistic reaction mechanism of cycloalternan-forming enzyme and disproportionating D-glucosyltransferase for production of cycloalternan in Bacillus)

RN 159640-28-5 HCAPLUS
CN α-D-Glucopyranose, O-α-D-glucopyranosyl-(1→3)-O-α-D-glucopyranosyl-(1→6)-O-α-D-glucopyranosyl-(1→3)-, cyclic 1,6'''-anhydride (9CI) (CA INDEX NAME)



REFERENCE COUNT: 27 THERE ARE 27 CITED REFERENCES AVAILABLE FOR THIS

RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 19 OF 33 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2003:663304 HCAPLUS <<LOGINID::20070424>>
DOCUMENT NUMBER: 139:178823
TITLE: Cyclic tetrasaccharide manufacture with Saccharomyces
INVENTOR(S): Watanabe, Hikaru; Nakano, Masayuki; Kubota, Norio; Fukuda, Yoshiharu; Miyake, Toshio
PATENT ASSIGNEE(S): Hayashibara Biochemical Laboratories, Inc., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 10 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

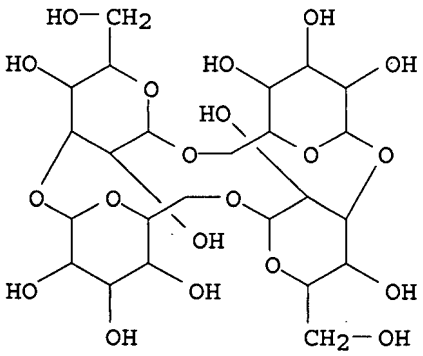
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003235596	A	20030826	JP 2002-41576	20020219

PRIORITY APPLN. INFO.: JP 2002-41576 20020219

AB The cyclic tetrasaccharide cyclo{→6)-α-D-glucopyranosyl-(1→3)-αΔ-glucopyranosyl-(1→6)-αΔ-glucopyranosyl-(1→3)-α-D-glucopyranosyl-(1→} (I) is manufactured with I-producing Saccharomyces such as S. cerevisiae. I may be prepared from the yeast or yeast products. I is useful for manufacturing sweetener, low-calorie food, inclusion compound, anticariogenic food, stabilizer, etc. It has good thermostability, acid-resistance, alkali resistance, etc.

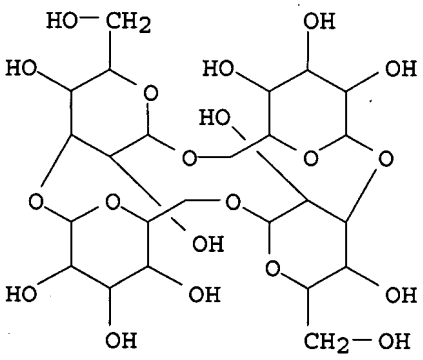
IT 159640-28-5P
RL: BPN (Biosynthetic preparation); FFD (Food or feed use); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
(cyclic tetrasaccharide manufacture with Saccharomyces)

RN 159640-28-5 HCAPLUS
CN α-D-Glucopyranose, O-α-D-glucopyranosyl-(1→3)-O-α-D-glucopyranosyl-(1→6)-O-α-D-glucopyranosyl-(1→3)-, cyclic 1,6'''-anhydride (9CI) (CA INDEX NAME)



L96 ANSWER 20 OF 33 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2003:466325 HCAPLUS <<LOGINID::20070424>>
DOCUMENT NUMBER: 139:333776
TITLE: 6-α-glucosyltransferase and 3-α-isomaltosyltransferase from Bacillus globisporus N75
AUTHOR(S): Aga, Hajime; Nishimoto, Tomoyuki; Kuniyoshi, Mieko; Maruta, Kazuhiko; Yamashita, Hiroshi; Higashiyama,

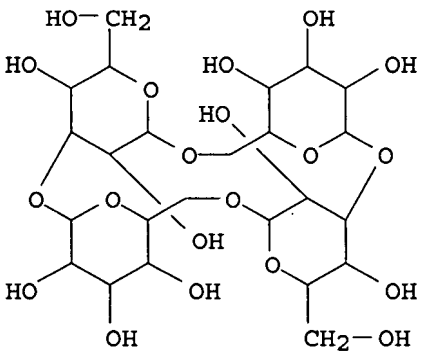
Takanobu; Nakada, Tetsuya; Kubota, Michio; Fukuda, Shigeharu; Kurimoto, Masashi; Tsujisaka, Yoshio
CORPORATE SOURCE: Amase Institute, Hayashibara Biochemical Laboratories, Inc., Okayama, 700-0834, Japan
SOURCE: Journal of Bioscience and Bioengineering (2003), 95(3), 215-224
CODEN: JBBIF6; ISSN: 1389-1723
PUBLISHER: Society for Biotechnology, Japan
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A bacterial strain, Bacillus globisporus N75, produced two glycosyltransferases, 6-α-glucosyltransferase (6GT) and 3-α-isomaltosyltransferase (IMT), jointly catalyzing formation of cyclo{→6)-α-D-Glcp-(1→3)-α-D-Glcp-(1→6)-α-D-Glcp-(1→3)-α-D-Glcp-(1→} (CTS) from α-1,4-glucan. The N75 enzymes produced CTS from dextrin in a 43.8% yield at the reaction temperature of 50°, which was 10° higher than a critical temperature of CTS-forming by the enzymes from B. globisporus C11. The optimum temps. for 6GT and IMT reactions were 55° and 50°, resp. The thermal stability of both enzymes was 45° under the condition at pH 6.0 for 60 min. The genes for 6GT and IMT were cloned from the genomic DNA of N75. The amino acid sequences deduced from the 6GT and IMT genes showed 82% and 85% identities, resp., to the sequences of the enzymes from C11. CTS yield was decreased by high concns. of the substrate. It was found that the reaction yield was improved by adding cyclomaltodextrin glucanotransferase (CGTase). We demonstrated mass-production of CTS from starch by using the N75 enzymes and CGTase.
IT 159640-28-5P
RL: BMF (Bioindustrial manufacture); BIOL (Biological study); PREP (Preparation)
(sequence and characterization of thermostable 6-α-glucosyltransferase and 3-α-isomaltosyltransferase from Bacillus globisporus N75, and use in mass production of CTS from tapioca starch)
RN 159640-28-5 HCAPLUS
CN α-D-Glucopyranose, O-α-D-glucopyranosyl-(1→3)-O-α-D-glucopyranosyl-(1→6)-O-α-D-glucopyranosyl-(1→3)-, cyclic 1,6'''-anhydride (9CI) (CA INDEX NAME)



REFERENCE COUNT: 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 21 OF 33 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2003:438400 HCAPLUS <<LOGINID::20070424>>
DOCUMENT NUMBER: 139:394966
TITLE: Synthesis of 3-O-β-N-acetylglucosaminyl cyclic

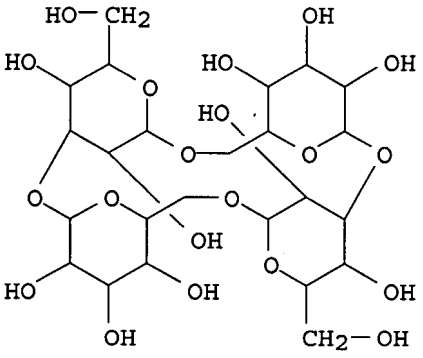
tetrasaccharide through a lysozyme-catalyzed transfer reaction
AUTHOR(S): Watanabe, Hikaru; Aga, Hajime; Sonoda, Tomohiko; Kubota, Michio; Fukuda, Shigeharu; Kurimoto, Masashi; Tsujisaka, Yoshio
CORPORATE SOURCE: Amase Institute, Hayashibara Biochemical Laboratories, Inc., Okayama, 700-0834, Japan
SOURCE: Bioscience, Biotechnology, and Biochemistry (2003), 67(5), 1182-1184
CODEN: BBBIEJ; ISSN: 0916-8451
PUBLISHER: Japan Society for Bioscience, Biotechnology, and Agrochemistry
DOCUMENT TYPE: Journal
LANGUAGE: English
OTHER SOURCE(S): CASREACT 139:394966
AB Egg white lysozyme was found to catalyze the transfer of N-acetylglucosamine to cyclo{→6)-α-D-Glcp-(1→3)-α-D-Glcp-(1→6)-α-D-Glcp-(1→3)-α-D-Glcp-(1→} (CTS). Structural anal. showed that the transfer product was 3-O-β-N-acetylglucosaminyl CTS, cyclo{→6)-α-D-Glcp-(1→3)-α-D-Glcp-(1→6)-[β-GlcNAc-(1→3)]-α-D-Glcp-(1→3)-α-D-Glcp-(1→}. This branched saccharide is anticipated to be a model compound of the sugar chains of glycoproteins.
IT 159640-28-5
RL: BCP (Biochemical process); RCT (Reactant); BIOL (Biological study); PROC (Process); RACT (Reactant or reagent)
(synthesis of 3-O-β-N-acetylglucosaminyl cyclic tetrasaccharide through lysozyme-catalyzed transfer reaction)
RN 159640-28-5 HCAPLUS
CN α-D-Glucopyranose, O-α-D-glucopyranosyl-(1→3)-O-α-D-glucopyranosyl-(1→6)-O-α-D-glucopyranosyl-(1→3)-, cyclic 1,6'''-anhydride (9CI) (CA INDEX NAME)



REFERENCE COUNT: 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 22 OF 33 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2003:438380 HCAPLUS <<LOGINID::20070424>>
DOCUMENT NUMBER: 139:394965
TITLE: Transglycosylation of glycosyl residues to cyclic tetrasaccharide by Bacillus stearothermophilus cyclomaltodextrin glucanotransferase using cyclomaltodextrin as the glycosyl donor
AUTHOR(S): Shibuya, Takashi; Aga, Hajime; Watanabe, Hikaru; Sonoda, Tomohiko; Kubota, Michio; Fukuda, Shigeharu;

Kurimoto, Masashi; Tsujisaka, Yoshio
CORPORATE SOURCE: Hayashibara Biochemical Laboratories, Inc., Okayama, 700-0834, Japan
SOURCE: Bioscience, Biotechnology, and Biochemistry (2003), 67(5), 1094-1100
CODEN: BBBIEJ; ISSN: 0916-8451
PUBLISHER: Japan Society for Bioscience, Biotechnology, and Agrochemistry
DOCUMENT TYPE: Journal
LANGUAGE: English
OTHER SOURCE(S): CASREACT 139:394965
AB Cyclomaltodextrin glucanotransferase (EC 2.4.1.19, abbreviated as CGTase) derived from Bacillus stearothermophilus produced a series of transfer products from a mixture of cyclomaltohexaose and cyclic tetrasaccharide (cyclo{→6)-α-D-Glcp-(1→3)-α-D-Glcp-(1→6)-α-D-Glcp-(1→3)-α-D-Glcp-(1→}, CTS). Of the transfer products, only two components, saccharides A and D, remained and accumulated after digestion with glucoamylase. The total combined yield of the saccharides reached 63.4% of total sugars, and enzymic and instrumental analyses revealed the structures of both saccharides. Saccharide A was identified as 4-mono-O-α-glucosyl-CTS, {→6)-[α-D-Glcp-(1→4)]-α-D-Glcp-(1→3)-α-D -Glcp-(1→6)-α-D-Glcp-(1→3)-α-D-Glcp-(1→}, and saccharide D was 4,4'-di-O-α-glucosyl-CTS, {→6)-[α-D-Glcp-(1→4)]-α-D-Glcp-(1→3)-α-D- Glcp-(1→6)-[α-D-Glcp-(1→4)]-α-D-Glcp-(1→3)-α-D-Glcp-(1→}. These structures led us to conclude that the glycosyl transfer catalyzed by CGTase was specific to the C4-OH of the 6-linked glucopyranosyl residues in CTS.
IT 159640-28-5
RL: BCP (Biochemical process); RCT (Reactant); BIOL (Biological study); PROC (Process); RACT (Reactant or reagent)
(transglycosylation of glycosyl residues to cyclic tetrasaccharide by Bacillus stearothermophilus cyclomaltodextrin glucanotransferase using cyclomaltodextrin as glycosyl donor)
RN 159640-28-5 HCAPLUS
CN α-D-Glucopyranose, O-α-D-glucopyranosyl-(1→3)-O-α-D-glucopyranosyl-(1→6)-O-α-D-glucopyranosyl-(1→3)-, cyclic 1,6'''-anhydride (9CI) (CA INDEX NAME)



REFERENCE COUNT: 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

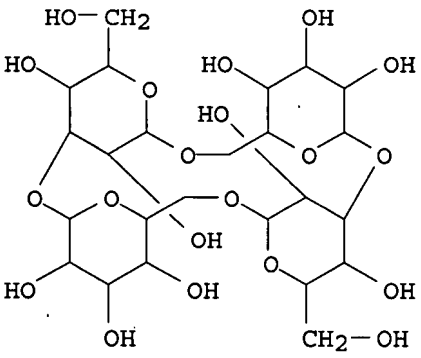
L96 ANSWER 23 OF 33 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2003:368562 HCAPLUS <<LOGINID::20070424>>
DOCUMENT NUMBER: 138:367676

TITLE: Enzymic production of cyclic alternan tetrasaccharides from oligosaccharide substrates
INVENTOR(S): Cote, Gregory L.
PATENT ASSIGNEE(S): The United States of America as Represented by the Secretary of Agriculture, USA
SOURCE: U.S., 5 pp.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6562600	B1	20030513	US 2001-891123	20010625
PRIORITY APPLN. INFO.:			US 2001-891123	20010625

AB The cyclic tetrasaccharide, cyclo{-α-D-Glcp-(1,3)-α-D-Glcp-(1,6)-α-D-Glcp-(1,3)-α-D-Glcp-(1,6)-}, may be produced by alternanase hydrolysis of complex carbohydrates other than alternan. Panose, pullulan, α-D-Glcp-(1,6)-α-D-Glcp-(1,3)-D-Glc, and D-glucans having alternating α-(1,6) and α-(1,4) linkages, are all hydrolyzed by alternanase to produce this cyclic tetrasaccharide. In this process, the cyclic tetrasaccharide is produced by contacting a solution of one or more of the above-mentioned complex carbohydrates with an amount of alternanase under conditions effective for activity of the enzyme. The substrate panose used in the reaction may be produced from a variety of polysaccharides or oligosaccharides, including starch, maltose, maltodextrins, pullulan, and mixts. thereof.

IT 159640-28-5P
RL: BMF (Bioindustrial manufacture); BPN (Biosynthetic preparation); BIOL (Biological study); PREP (Preparation)
(enzymic production of cyclic alternan tetrasaccharides from oligosaccharide substrates)
RN 159640-28-5 HCAPLUS
CN α-D-Glucopyranose, O-α-D-glucopyranosyl-(1→3)-O-α-D-glucopyranosyl-(1→6)-O-α-D-glucopyranosyl-(1→3)-, cyclic 1,6'''-anhydride (9CI) (CA INDEX NAME)



REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 24 OF 33 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2003:11017 HCAPLUS <<LOGINID::20070424>>
DOCUMENT NUMBER: 138:203778
TITLE: Production of cyclic tetrasaccharide from starch using a novel enzyme system from Bacillus globisporus C11

AUTHOR(S): Aga, Hajime; Higashiyama, Takanobu; Watanabe, Hikaru; Sonoda, Tomohiko; Nishimoto, Tomoyuki; Kubota, Michio; Fukuda, Shigeharu; Kurimoto, Masashi; Tsujisaka, Yoshio

CORPORATE SOURCE: Amase Institute, Hayashibara Biochemical Laboratories, Inc., Okayama, 700-0834, Japan

SOURCE: Journal of Bioscience and Bioengineering (2002), 94(4), 336-342
CODEN: JBBIF6; ISSN: 1389-1723

PUBLISHER: Society for Bioscience and Bioengineering, Japan

DOCUMENT TYPE: Journal

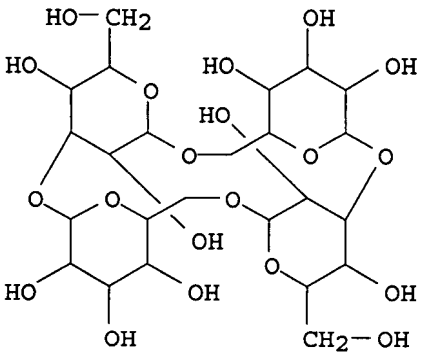
LANGUAGE: English

AB Production of cyclo(→6)-α-D-Glcp-(1→3)-α-D-Glcp-(1→6)-α-D-Glcp-(1→3)-α-D-Glcp-(1→) (CTS, cyclic tetrasaccharide) from starch was attempted using 1,6-α-glucosyltransferase (6GT) and 1,3-α-isomaltosyltransferase (IMT) from Bacillus globisporus C11. The optimal conditions for production from partially hydrolyzed starch were as follows: substrate concentration, 3%; pH 6-7; temperature, 30°C; 6GT, 1 unit/g-dry solid (DS); IMT, 10 units/g-DS. The production of CTS was demonstrated and 544 g of CTS hydrate crystal powders were obtained from 3500 g of partially hydrolyzed starch. Two major byproducts were also isolated from the reaction mixture and identified as the branched derivs. of CTSs, 4-O-α-D-glucopyranosyl-CTS and 3-O-α-isomaltosyl-CTS.

IT 159640-28-5P
RL: BMF (Bioindustrial manufacture); PRP (Properties); PUR (Purification or recovery); BIOL (Biological study); PREP (Preparation)
(production of cyclic tetrasaccharide from starch using novel enzyme system from Bacillus globisporus C11)

RN 159640-28-5 HCAPLUS

CN α-D-Glucopyranose, O-α-D-glucopyranosyl-(1→3)-O-α-D-glucopyranosyl-(1→6)-O-α-D-glucopyranosyl-(1→3)-, cyclic 1,6'''-anhydride (9CI) (CA INDEX NAME)



REFERENCE COUNT: 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 25 OF 33 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2002:785000 HCAPLUS <<LOGINID::20070424>>

DOCUMENT NUMBER: 138:102718

TITLE: Purification and characterization of glucosyltransferase and glucanotransferase involved in the production of cyclic tetrasaccharide in Bacillus globisporus C11

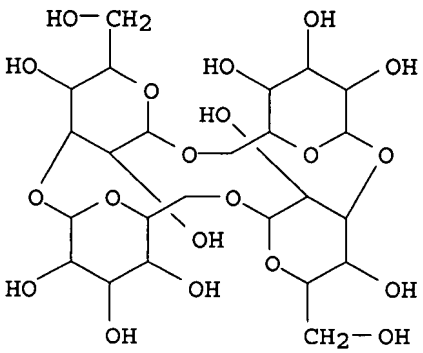
AUTHOR(S): Nishimoto, Tomoyuki; Aga, Hajime; Mukai, Kazuhisa; Hashimoto, Takaharu; Watanabe, Hikaru; Kubota, Michio;

Fukuda, Shigeharu; Kurimoto, Masashi; Tsujisaka, Yoshio
CORPORATE SOURCE: Hayashibara Biochemical Laboratories, Inc., Okayama, 700-0834, Japan
SOURCE: Bioscience, Biotechnology, and Biochemistry (2002), 66(9), 1806-1818
CODEN: BBBIEJ; ISSN: 0916-8451
PUBLISHER: Japan Society for Bioscience, Biotechnology, and Agrochemistry
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Glucosyltransferase and glucanotransferase involved in the production of cyclic tetrasaccharide (CTS; cyclo {→6}-α-D-glucopyranosyl-(1→3)-α-D-glucopyranosyl-(1→6)-α-D-glucopyranosyl-(1→3)-α-D- glucopyranosyl-(1→)) from α-1,4-glucan were purified from Bacillus globisporus C11. The former was a 1,6-α-glucosyltransferase (6GT) catalyzing the α-1,6-transglucosylaction of one glucosyl residue to the nonreducing end of maltooligosaccharides (MOS) to produce α-isomaltosyl-MOS from MOS. The latter was an isomaltosyl transferase (IMT) catalyzing α-1,3-, α-1,4-, and α,β-1,1-intermol. transglycosylation of isomaltosyl residues. When IMT catalyzed α-1,3-transglycosylation, α-isomaltosyl-(1→3)-α-isomaltosyl-MOS was produced from α-isomaltosyl-MOS. In addition, IMT catalyzed cyclization, and produced CTS from α-isomaltosyl-(1→3)-α-isomaltosyl-MOS by intramol. transglycosylation. Therefore, the mechanism of CTS synthesis from MOS by the two enzymes seemed to follow three steps:. (1) MOS→α-isomaltosyl-MOS (by 6GT), (2) α-Isomaltosyl-MOS→α-isomaltosyl-(1→3)-α-isomaltosyl-MOS (by IMT), and (3) α-Isomaltosyl-(1→3)-α-isomaltosyl-MOS→CTS + MOS (by IMT). The mol. mass of 6GT was estimated to be 137 kDa by SDS-PAGE. The optimum pH and temperature for 6GT were pH 6.0 and 45°, resp. This enzyme was stable at from pH 5.5 to 10 and on being heated to 40° for 60 min. 6GT was strongly activated and stabilized by various divalent cations. The mol. mass of IMT was estimated to be 102 kDa by SDS-PAGE. The optimum pH and temperature for IMT were pH 6.0 and 50°, resp. This enzyme was stable at from pH 4.5 to 9.0 and on being heated to 40° for 60 min. Divalent cations had no effect on the stability or activity of this enzyme.

IT 159640-28-5
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(purification and characterization of glucosyltransferase and glucanotransferase involved in production of cyclic tetrasaccharide in Bacillus globisporus)

RN 159640-28-5 HCAPLUS
CN α-D-Glucopyranose, O-α-D-glucopyranosyl-(1→3)-O-α-D-glucopyranosyl-(1→6)-O-α-D-glucopyranosyl-(1→3)-, cyclic 1,6'''-anhydride (9CI) (CA INDEX NAME)



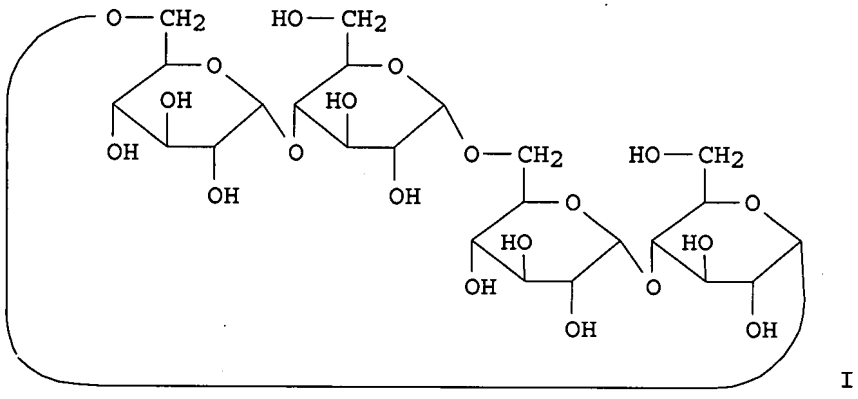
REFERENCE COUNT: 34 THERE ARE 34 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 26 OF 33 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2002:555405 HCAPLUS <<LOGINID::20070424>>
DOCUMENT NUMBER: 137:124459
TITLE: Dehydrating agent and method for dehydrating moist article using the agent and dehydrated article obtained by the method
INVENTOR(S): Kubota, Michio; Nishimoto, Tomoyuki; Aga, Hajime; Fukuda, Shigeharu; Miyake, Toshio
PATENT ASSIGNEE(S): Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Japan
SOURCE: PCT Int. Appl., 140 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002057011	A1	20020725	WO 2002-JP288	20020117
W: AU, CA, CN, JP, KR, US				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				
CA 2434284	A1	20020725	CA 2002-2434284	20020117
AU 2002228330	A1	20020730	AU 2002-228330	20020117
EP 1360988	A1	20031112	EP 2002-710309	20020117
EP 1360988	B1	20061011		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
AT 342125	T	20061115	AT 2002-710309	20020117
US 2006008791	A1	20060112	US 2003-466438	20030716
US 7186701	B2	20070306		

PRIORITY APPLN. INFO.: JP 2001-10991 A 20010119
WO 2002-JP288 W 20020117

GI



I

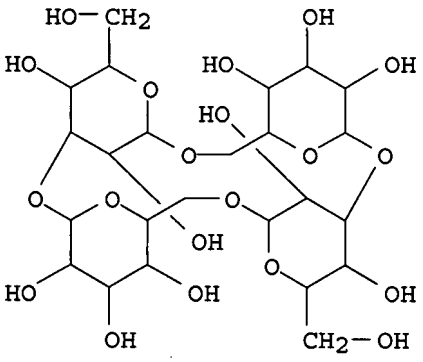
AB A dehydrating agent comprises a cyclic tetra-saccharide, which is defined in the specification (I), as an effective component; a method for

dehydrating a moist article, characterized in that the moist article is incorporated into, is contacted with, or is caused to be present with a cyclic tetra-saccharide; and a dehydrated article obtained by the method. The cyclic tetra-saccharide is a non-reducing saccharide and therefore can be used for dehydrating an article with no deterioration of the quality of the article.

IT 159640-28-5
RL: BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)
(production of cyclic tetra-saccharide as dehydrating agent for food)

RN 159640-28-5 HCAPLUS

CN α-D-Glucopyranose, O-α-D-glucopyranosyl-(1→3)-O-α-D-glucopyranosyl-(1→6)-O-α-D-glucopyranosyl-(1→3)-, cyclic 1,6'''-anhydride (9CI) (CA INDEX NAME)



REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 27 OF 33 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2002:430804 HCAPLUS <<LOGINID::20070424>>

DOCUMENT NUMBER: 138:852

TITLE: Cloning and sequencing of the genes encoding cyclic tetrasaccharide-synthesizing enzymes from Bacillus globisporus C11

AUTHOR(S): Aga, Hajime; Maruta, Kazuhiko; Yamamoto, Takuo; Kubota, Michio; Fukuda, Shigeharu; Kurimoto, Masashi; Tsujisaka, Yoshio

CORPORATE SOURCE: Hayashibara Biochemical Laboratories, Amase Institute, Okayama, 700-0834, Japan

SOURCE: Bioscience, Biotechnology, and Biochemistry (2002), 66(5), 1057-1068
CODEN: BBBIEJ; ISSN: 0916-8451

PUBLISHER: Japan Society for Bioscience, Biotechnology, and Agrochemistry

DOCUMENT TYPE: Journal

LANGUAGE: English

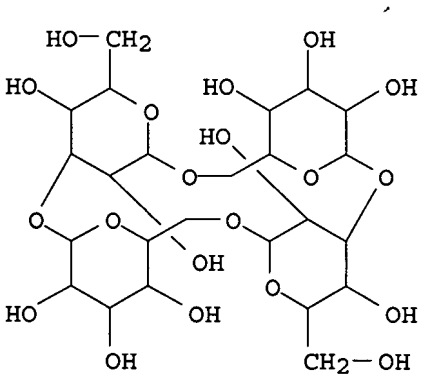
AB The genes for isomaltosyltransferase (CtsY) and 6-glucosyltransferase (CtsZ), involved in synthesis of a cyclic tetrasaccharide from α-glucan, have been cloned from the genome of Bacillus globisporus C11. The amino-acid sequence deduced from the ctsY gene is composed of 1093 residues having a signal sequence of 29 residues in its N-terminus. The ctsZ gene encodes a protein consisting of 1284 residues with a signal sequence of 35 residues. Both of the gene products show similarities to α-glucosidases belonging to glycoside hydrolase family 31 and conserve two aspartic acids corresponding to the putative catalytic residues of these enzymes. The two genes are linked together, forming

ctsYZ. The DNA sequence of 16,515 bp analyzed in this study contains four open reading frames (ORFs) upstream of ctsYZ and one ORF downstream. The first six ORFs, including ctsYZ, form a gene cluster, ctsUVWXYZ. The amino-acid sequences deduced from ctsUV are similar in to a sequence permease and a sugar-binding protein for the sugar transport system from Thermococcus sp. B1001. The third ctsW encodes a protein similar to CtsY, suggested to be another isomaltosyltransferase preferring panose to high-mol.-mass substrates.

IT 159640-28-5
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(cloning and sequencing of the genes encoding cyclic tetrasaccharide-synthesizing enzymes from Bacillus globisporus C11)

RN 159640-28-5 HCAPLUS

CN α-D-Glucopyranose, O-α-D-glucopyranosyl-(1→3)-O-α-D-glucopyranosyl-(1→6)-O-α-D-glucopyranosyl-(1→3)-, cyclic 1,6'''-anhydride (9CI) (CA INDEX NAME)



REFERENCE COUNT: 33 THERE ARE 33 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 28 OF 33 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2002:391867 HCAPLUS <<LOGINID::20070424>>

DOCUMENT NUMBER: 136:382190

TITLE: α-Isomaltosyltransferase catalyzing synthesis of cyclic tetrasaccharide from Bacillus, isolation and recombinant expression

INVENTOR(S): Kubota, Michio; Maruta, Kazuhiko; Yamamoto, Takuo; Fukuda, Shigeharu

PATENT ASSIGNEE(S): Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Japan

SOURCE: PCT Int. Appl., 108 pp.
CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002040659	A1	20020523	WO 2001-JP10044	20011116
W: JP, KR, US				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				
EP 1335020	A1	20030813	EP 2001-996600	20011116
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY, TR				

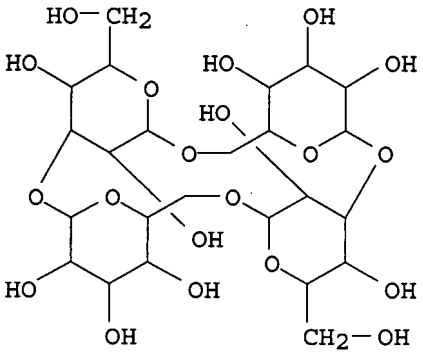
TW 588110	B	20040521	TW 2001-90128473	20011116
US 2004121431	A1	20040624	US 2002-181183	20020715
US 7098013	B2	20060829		
PRIORITY APPLN. INFO.:			JP 2000-350142 A	20001116
			WO 2001-JP10044 W	20011116

AB α-Isomaltosyltransferase capable of forming a cyclic tetrasaccharide having a cyclo {-6} -α-D-glucopyranosyl- (1-3) -α-D-glucopyranosyl- (1-6) -α-D-glucopyranosyl- (1-3) -α-D-glucopyranosyl- (1-) structure via a reaction involving α-isomaltosyl transfer starting from a saccharide having an α-1,6-glucosyl bond at the non-reducing end and an α-1,4-glucosyl bond at the other end and having a degree of glucose polymerization of at least 3, is provided. Isolation of the enzyme from Bacillus globisporus C11 and N75 strains, and characterization of catalytic activity, including substrate specificity, are described. The enzyme used 62-O-α-glucosyl maltose, 63-O-α-glucosyl maltotriose, 64-O-α-glucosyl maltotriose, 65-O-α-glucosyl maltopentaose as substrate to produce cyclic tetrasaccharides and maltooligosaccharides having 2 d.p. less than the substrates.

IT 159640-28-5P
RL: BPN (Biosynthetic preparation); BIOL (Biological study); PREP (Preparation)
(cyclic tetrasaccharide having; α-Isomaltosyltransferase catalyzing synthesis of cyclic tetrasaccharide from Bacillus, isolation and recombinant expression)

RN 159640-28-5 HCAPLUS

CN α-D-Glucopyranose, O-α-D-glucopyranosyl-(1→3)-O-α-D-glucopyranosyl-(1→6)-O-α-D-glucopyranosyl-(1→3)-, cyclic 1,6'''-anhydride (9CI) (CA INDEX NAME)



REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 29 OF 33 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER:	2001:476200 HCAPLUS <<LOGINID::20070424>>
DOCUMENT NUMBER:	135:223267
TITLE:	The hydrolytic and transferase action of alternanase on oligosaccharides
AUTHOR(S):	Cote, G. L.; Ahlgren, J. A.
CORPORATE SOURCE:	National Center for Agricultural Utilization Research, Fermentation Biochemistry Research Unit, USDA, Agricultural Research Service, Peoria, IL, 61604, USA
SOURCE:	Carbohydrate Research (2001), 332(4), 373-379 CODEN: CRBRAT; ISSN: 0008-6215
PUBLISHER:	Elsevier Science Ltd.
DOCUMENT TYPE:	Journal

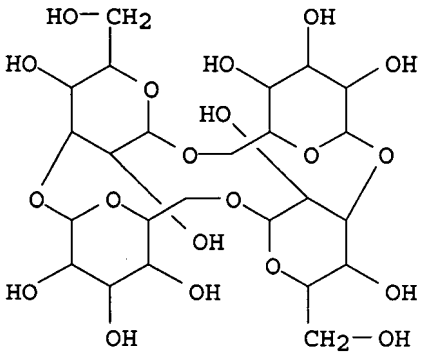
LANGUAGE: English

AB Alternanase is an enzyme which endo-hydrolytically cleaves the α-(1→3), α-(1→6)-linked D-glucan, alternan. The main products are isomaltose, α-D-Glcp-(1→3)-α-D-Glcp-(1→6)-D-Glc and the cyclic tetrasaccharide cyclo{6)-α-D-Glcp-(1→3)-α-D-Glcp-(1→6)-α-D-Glcp-(1→ 3)-α-D-Glcp-(1 }. It is also capable of acting on oligosaccharide substrates. The cyclic tetrasaccharide is slowly hydrolyzed to isomaltose. Panose and the trisaccharide α-D-Glcp-(1→6)-α-D-Glcp-(1→3)-D-Glc both undergo transglycosylation reactions to give rise to the cyclic tetrasaccharide plus D-glucose, with panose being converted at a much faster rate. The tetrasaccharide α-D-Glcp-(1→3)-α-D-Glcp-(1→6)-α-D-Glcp-(1→4)-D-Glc is hydrolyzed to D-glucose plus the trisaccharide α-D-Glcp-(1→3)-α-D-Glcp-(1→6)-D-Glc. Alternanase does not act on isomaltotriose, theanderose (6Glc-O-α-D-Glcp sucrose), or α-D-Glcp-(1→6)-α-D-Glcp-(1→6)-α-D-Glcp-(1→4)-α-D-Glc. The enzyme releases 4-nitrophenol from 4-nitrophenyl α-isomaltoside, but not from 4-nitrophenyl α-D-glucopyranoside, 4-nitrophenyl α-isomaltotrioside, or 4-nitrophenyl α-isomaltotetraoside.

IT 159640-28-5
RL: BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); PROC (Process)
(hydrolytic and transferase action of alternanase on oligosaccharides)

RN 159640-28-5 HCAPLUS

CN α-D-Glucopyranose, O-α-D-glucopyranosyl-(1→3)-O-α-D-glucopyranosyl-(1→6)-O-α-D-glucopyranosyl-(1→3)-, cyclic 1,6'''-anhydride (9CI) (CA INDEX NAME)



REFERENCE COUNT: 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 30 OF 33 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2001:372605 HCAPLUS <<LOGINID::20070424>>

DOCUMENT NUMBER: 135:153027

TITLE: Enzymic α-galactosylation of a cyclic glucotetrasaccharide derived from alternan

AUTHOR(S): Biely, P.; Puchart, V.; Cote, G. L.

CORPORATE SOURCE: Institute of Chemistry, Slovak Academy of Sciences, Bratislava, 842 38, Slovakia

SOURCE: Carbohydrate Research (2001), 332(3), 299-303
CODEN: CRBRAT; ISSN: 0008-6215

PUBLISHER: Elsevier Science Ltd.

DOCUMENT TYPE: Journal

LANGUAGE: English

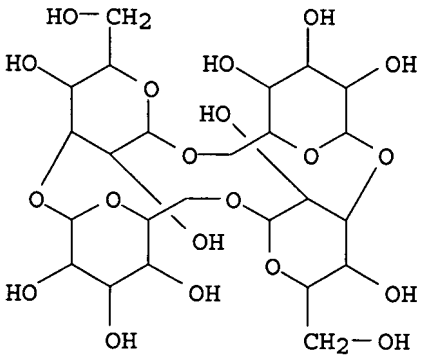
OTHER SOURCE(S): CASREACT 135:153027

AB Alternanase catalyzes the hydrolysis of alternan, an α-(1→3)-α-(1→6)-D-glucan produced by Leuconostoc mesenteroides, resulting in the formation of a cyclic tetramer cyclo{→3)-α-D-Glcp-(1→6)-α-D-Glcp-(1→}2 (cGlc4). Two α-galactosidases, one from coffee bean and the other produced by a fungus, currently described as Thermomyces lanuginosus, were found to catalyze an efficient 6-O-α-D-galactopyranosylation of cGlc4. The attachment of a nonreducing α-D-galactopyranosyl residue to the cGlc4 mol. opens new possibilities for future applications of the cyclic tetramer, since the D-galactopyranosyl residue can be easily modified by D-galactose oxidase to introduce a reactive aldehyde group. The results also extend our knowledge about the synthetic potential of T. lanuginosus α-galactosidase.

IT 159640-28-5
RL: RCT (Reactant); RACT (Reactant or reagent)
(enzymic α-galactosylation of a cyclic glucotetrasaccharide derived from alternan)

RN 159640-28-5 HCAPLUS

CN α-D-Glucopyranose, O-α-D-glucopyranosyl-(1→3)-O-α-D-glucopyranosyl-(1→6)-O-α-D-glucopyranosyl-(1→3)-, cyclic 1,6'''-anhydride (9CI) (CA INDEX NAME)



REFERENCE COUNT: 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 31 OF 33 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2000:834472 HCAPLUS <<LOGINID::20070424>>

DOCUMENT NUMBER: 134:116143

TITLE: X-ray structure determination and modeling of the cyclic tetrasaccharide cyclo-{6)-α-D-Glcp-(1,3)-α-D-Glcp-(1,6)-α-D-Glcp-(1,3)-α-D-Glcp-(1}

AUTHOR(S): Bradbrook, G. M.; Gessler, K.; Cote, G. L.; Momany, F.; Biely, P.; Bordet, P.; Perez, S.; Imberty, A.

CORPORATE SOURCE: CERMAV-CNRS (affiliated with Universite Joseph Fourier), Grenoble, F-38041, Fr.

SOURCE: Carbohydrate Research (2000), 329(3), 655-665
CODEN: CRBRAT; ISSN: 0008-6215

PUBLISHER: Elsevier Science Ltd.

DOCUMENT TYPE: Journal

LANGUAGE: English

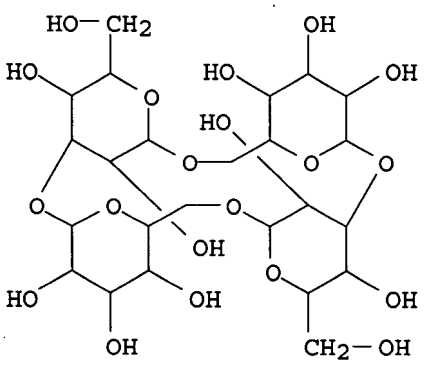
AB The cyclic tetrasaccharide cyclo-{(→6)-α-D-Glcp-(1,3)-α-D-Glcp-(1,6)-α-D-Glcp-(1,3)-α-D-Glcp-(1→)} is the major compound obtained by the action of endo-alternases on the alternan polysaccharide. Crystals of this cyclo-tetra-glucose belong to the

orthorhombic space group P212121 with a=7.620(5), b=12.450(5) and c=34.800(5) A. The asym. unit contains one tetrasaccharide together with five water mols. The tetrasaccharide adopts a plate-like overall shape with a very shallow depression on one side. The hydrogen bond network is asym., with a single intramol. hydrogen bond: O-2 of glucose ring 1 being the donor to O-2 of glucose ring 3. These two hydroxyl groups are located below the ring and their orientation, dictated by this hydrogen bond, makes the floor of the plate. Among the five water mols., one located above the center of the plate occupies perfectly the shallow depression in the plate shape formed by the tetrasaccharide. Mol. dynamics simulation of the tetrasaccharide in explicit water allows rationalization of the discrepancies observed between the X-ray structures and data obtained previously by NMR.

IT 159640-28-5
RL: PRP (Properties)
(x-ray structure determination and modeling of the cyclic tetrasaccharide cyclo-{6)-α-D-Glcp-(1,3)-α-D-Glcp-(1,6)-α-D-Glcp-(1,3)-α-D-Glcp-(1})

RN 159640-28-5 HCAPLUS

CN α-D-Glucopyranose, O-α-D-glucopyranosyl-(1→3)-O-α-D-glucopyranosyl-(1→6)-O-α-D-glucopyranosyl-(1→3)-, cyclic 1,6'''-anhydride (9CI) (CA INDEX NAME)



REFERENCE COUNT: 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 32 OF 33 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1998:508877 HCAPLUS <<LOGINID::20070424>>
DOCUMENT NUMBER: 129:133074
TITLE: Alternanase from soil bacteria produces cyclic α-1,3-linked and α-1,6-linked oligosaccharides of D-glucose
INVENTOR(S): Cote, Gregory L.; Wyckoff, Herbert; Biely, Peter
PATENT ASSIGNEE(S): United States Dept. of Agriculture, USA
SOURCE: U.S., 11 pp.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5786196	A	19980728	US 1995-490003	19950612
US 5889179	A	19990330	US 1998-98368	19980617
US 5888776	A	19990330	US 1998-98886	19980617

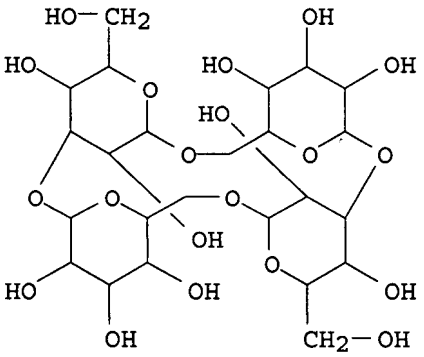
PRIORITY APPLN. INFO.: US 1995-490003 A3 19950612

AB A new enzyme, alternanase, which is effective for the endo-hydrolytic cleavage of alternan, producing a thinned composition of low-mol.-weight fractions which exhibit reduced viscosity and increased solubility relative to native alternan, is described. The enzyme is produced and secreted extracellularly by a plurality of novel bacteria isolated from soil. One of the fractions present in the thinned alternan resulting from hydrolysis with alternanase is a the cyclic tetrasaccharide, cyclo{-6)-α-D-Glcp-(1,3)-α-D-Glcp-(1,6)-α-D-Glcp-(1,3)-α-D-Glcp-(1-}. A novel method for isolating strains of microorganisms which produce endo-α-D-glucanases such as alternanase effective for the endo-hydrolytic cleavage or thinning of alternan is also described. Cultures of the subject strains are contacted with a test substrate of alternan coupled to a detectable indicator. Detection of released indicator provides an indication of endo-α-D-glucanase activity.

IT 159640-28-5P
RL: BPN (Biosynthetic preparation); BIOL (Biological study); PREP (Preparation)
(alternanase from soil bacteria produces cyclic α-1,3-linked and α-1,6-linked oligosaccharides of D-glucose)

RN 159640-28-5 HCAPLUS

CN α-D-Glucopyranose, O-α-D-glucopyranosyl-(1→3)-O-α-D-glucopyranosyl-(1→6)-O-α-D-glucopyranosyl-(1→3)-, cyclic 1,6'''-anhydride (9CI) (CA INDEX NAME)



REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 33 OF 33 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1995:214088 HCAPLUS <<LOGINID::20070424>>

DOCUMENT NUMBER: 122:26423

TITLE: Enzymically produced cyclic α-1,3-linked and α-1,6-linked oligosaccharides of D-glucose

AUTHOR(S): Cote, Gregory L.; Biely, Peter

CORPORATE SOURCE: Biopolymer Res. Unit, U.S. Dep. Agriculture, IL, USA

SOURCE: European Journal of Biochemistry (1994), 226(2), 641-8
CODEN: EJBCAI; ISSN: 0014-2956

PUBLISHER: Springer

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 122:26423

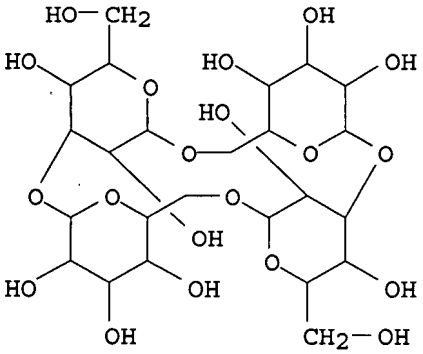
AB A new type of bacterial enzyme hydrolyzed alternan (Leuconostoc mesenteroides NRRL B-1355 fraction S dextran, an alternating α-1,3-α-1,6-D-glucan) to give rise to a series of oligosaccharides. The oligosaccharide formed in the greatest proportion was a cyclic tetrasaccharide of D-glucosyl residues linked in an

alternating α-1,3-α-1,6 fashion. Other saccharide products included isomaltose and α-D-glucopyranosyl-1,3-α-D-glucopyranosyl-1,6-D-glucose. Oligosaccharides of higher degrees of polymerization were also formed, and included α-D-glucosylated derivs. of the cyclic tetrasaccharide. This is the first report of a naturally produced cyclic tetrasaccharide.

IT 159640-28-5P
RL: BPN (Biosynthetic preparation); BIOL (Biological study); PREP (Preparation)
(alternanase digestion of alternan produces cyclic α-1,3-linked and α-1,6-linked oligosaccharides of D-glucose)

RN 159640-28-5 HCAPLUS

CN α-D-Glucopyranose, O-α-D-glucopyranosyl-(1→3)-O-α-D-glucopyranosyl-(1→6)-O-α-D-glucopyranosyl-(1→3)-, cyclic 1,6'''-anhydride (9CI) (CA INDEX NAME)



L87 ANSWER 1 OF 46 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2007:350863 HCAPLUS <<LOGINID::20070424>>
DOCUMENT NUMBER: 146:337132
TITLE: Immunomodulating agent in gut
INVENTOR(S): Hino, Keiko; Kurose, Mayumi; Sakurai, Takeo; Inoue, Shinichiro; Ogawa, Tohru; Oku, Kazuyuki; Chaen, Hiroto; Fukuda, Shigeharu
PATENT ASSIGNEE(S): Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Japan
SOURCE: PCT Int. Appl., 22pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

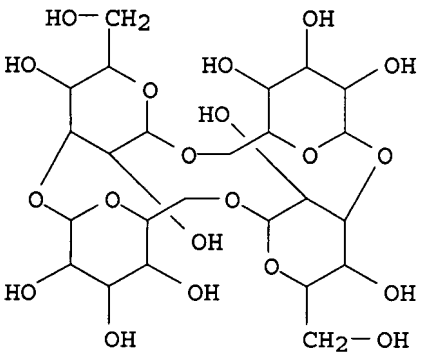
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2007034748	A1	20070329	WO 2006-JP318390	20060915

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

PRIORITY APPLN. INFO.: JP 2005-275360 A 20050922

AB Discloses is an immunomodulating agent in the gut, which can be ingested continuously in the daily dietary habit and does not produce any adverse side effect. The immunomodulating agent comprises a cyclic tetrasaccharide as an active ingredient. The cyclic tetrasaccharide promotes production of IgA and/or interferon-γ. Thus, cyclic tetrasaccharide syrup containing cyclo(→6)-α-D-glucopyranosyl-(1→3)-α-D-glucopyranosyl-(1→6)-α-D-glucopyranosyl-(1→3)-α-D-glucopyranosyl-(1→) was prepared from starch with α-amylase (Termamyl 60L), α-isomaltosylglucosaccharide synthase, and α-isomaltosyl transferase. The obtained cyclic tetrasaccharide syrup was combined with other ingredients to give a chewing gum.

IT 159640-28-5P
RL: BPN (Biosynthetic preparation); FFD (Food or feed use); PAC (Pharmacological activity); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
(intestinal immunomodulating agent containing cyclic tetrasaccharide)
RN 159640-28-5 HCAPLUS
CN α-D-Glucopyranose, O-α-D-glucopyranosyl-(1→3)-O-α-D-glucopyranosyl-(1→6)-O-α-D-glucopyranosyl-(1→3)-, cyclic 1,6'''-anhydride (9CI) (CA INDEX NAME)



REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

=>

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367544 MINERAL
255910 MINERALS
516235 MINERAL
(MINERAL OR MINERALS)
L88 3 L87 AND MINERAL

=> s l87 not l88
L89 43 L87 NOT L88

=> s l88 ibib abs hitstr 1-3
MISSING OPERATOR L88 IBIB
The search profile that was entered contains terms or
nested terms that are not separated by a logical operator.

=> d l88 ibib abs hitstr 1-3

L88 ANSWER 1 OF 3 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2005:76275 HCAPLUS <<LOGINID::20070424>>
DOCUMENT NUMBER: 142:162642
TITLE: Accelerator for mineral absorption and use thereof
INVENTOR(S): Oku, Kazuyuki; Kubota, Michio; Fukuda, Shigeharu; Miyake, Toshio
PATENT ASSIGNEE(S): Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Japan
SOURCE: PCT Int. Appl., 41 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005007171	A1	20050127	WO 2004-JP9809	20040709

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY,

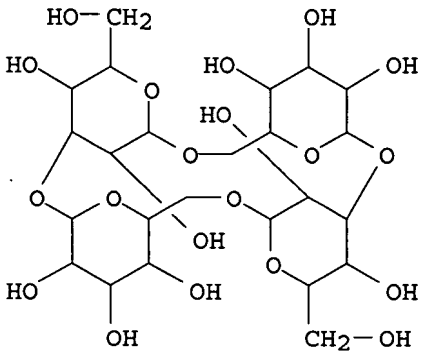
TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

EP 1652527	A1	20060503	EP 2004-747277		20040709
R: DE, FR, GB					
US 2006210646	A1	20060921	US 2006-565069		20060118
PRIORITY APPLN. INFO.:			JP 2003-276602	A	20030718
			WO 2004-JP9809	W	20040709

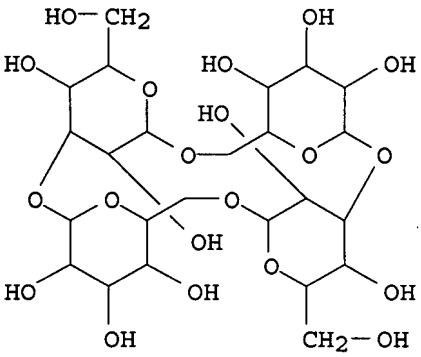
AB Disclosed is an accelerator for mineral absorption and a composition for mineral absorption acceleration which contains the accelerator. The accelerator for mineral absorption comprises a cyclic tetrasaccharide and/or a glucide derivative thereof as an active ingredient. An mineral absorption accelerator cyclo[-α-D-glucopyranosyl-(1→3)-α-D-glucopyranosyl-(1→6)-α-D-glucopyranosyl-(1→3)-α-D-glucopyranosyl-(1→6)]pentahydrate was obtained from corn starch for use in pharmaceuticals, foods, and/or feeds.

IT 159640-28-5P 532945-75-8P 532945-76-9P
RL: FFD (Food or feed use); NPO (Natural product occurrence); PUR (Purification or recovery); THU (Therapeutic use); BIOL (Biological study); OCCU (Occurrence); PREP (Preparation); USES (Uses)
(mineral absorption accelerators containing cyclic tetrasaccharides and other components for pharmaceuticals, foods, and/or feeds)

RN 159640-28-5 HCAPLUS
CN α-D-Glucopyranose, O-α-D-glucopyranosyl-(1→3)-O-α-D-glucopyranosyl-(1→6)-O-α-D-glucopyranosyl-(1→3)-, cyclic 1,6'''-anhydride (9CI) (CA INDEX NAME)

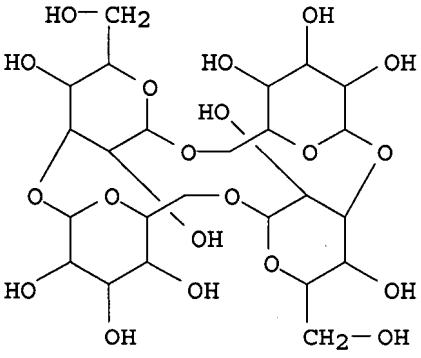


RN 532945-75-8 HCAPLUS
CN α-D-Glucopyranose, O-α-D-glucopyranosyl-(1→3)-O-α-D-glucopyranosyl-(1→6)-O-α-D-glucopyranosyl-(1→3)-, cyclic 1,6'''-anhydride, monohydrate (9CI) (CA INDEX NAME)



● H_2O

RN 532945-76-9 HCAPLUS
CN α-D-Glucopyranose, O-α-D-glucopyranosyl-(1→3)-O-α-D-glucopyranosyl-(1→6)-O-α-D-glucopyranosyl-(1→3)-, cyclic 1,6'''-anhydride, pentahydrate (9CI) (CA INDEX NAME)



●5 H_2O

REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

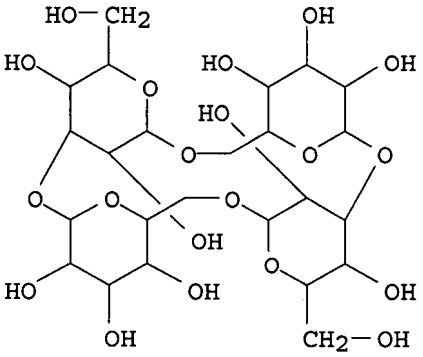
L88 ANSWER 2 OF 3 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2004:747270 HCAPLUS <<LOGINID::20070424>>
DOCUMENT NUMBER: 142:409741
TITLE: The development of a new mass-production method of cyclic tetrasaccharide and its functions
AUTHOR(S): Nishimoto, Tomoyuki
CORPORATE SOURCE: Hayashibara Biochemical Laboratories, Inc., Japan
SOURCE: Nippon Nogei Kagaku Kaishi (2004), 78(9), 866-869
CODEN: NNKKAA; ISSN: 0002-1407
PUBLISHER: Nippon Nogei Kagakkai
DOCUMENT TYPE: Journal; General Review
LANGUAGE: Japanese
AB A review on enzymic production of cyclic tetrasaccharide (CTS) from α-1,4-glucan, enzymic manufacture of CTS from starch, and phys.

properties, metabolism, hypotriglyceridemic activity, mineral absorption-promoting activity, and vitamin-stabilization effect of CTS.

IT 159640-28-5P
RL: BMF (Bioindustrial manufacture); PAC (Pharmacological activity); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
(enzymic manufacture of cyclic tetrasaccharide from starch and its biol. functions)

RN 159640-28-5 HCAPLUS

CN α-D-Glucopyranose, O-α-D-glucopyranosyl-(1→3)-O-α-D-glucopyranosyl-(1→6)-O-α-D-glucopyranosyl-(1→3)-, cyclic 1,6'''-anhydride (9CI) (CA INDEX NAME)



L88 ANSWER 3 OF 3 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2003:424469 HCAPLUS <<LOGINID::20070424>>

DOCUMENT NUMBER: 139:6073

TITLE: Cyclic tetrasaccharide for inhibition of decrease of active oxygen-scavenging activity and its compositions suitable for foods, cosmetics, and pharmaceuticals

INVENTOR(S): Oku, Kazuyuki; Kubota, Norio; Fukuda, Shigeharu; Miyake, Toshio

PATENT ASSIGNEE(S): Hayashibara Biochemical Laboratories, Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 15 pp.
CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003160495	A	20030603	JP 2001-355273	20011120
TW 256292	B	20060611	TW 2002-91133053	20021111
EP 1321148	A1	20030625	EP 2002-257948	20021119
EP 1321148	B1	20060524		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, SK				
US 2003108593	A1	20030612	US 2002-299678	20021120
US 2005123671	A1	20050609	US 2004-965739	20041018
US 2005065030	A1	20050324	US 2004-986287	20041112

PRIORITY APPLN. INFO.: JP 2001-355273 A 20011120
US 2002-299678 B3 20021120

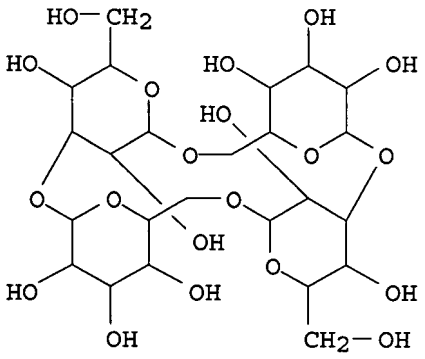
AB Plant-derived active O-scavenging substances are mixed with cyclo[-α-D-glucopyranosyl-(1→3)-α-D-glucopyranosyl-(1→6)-α-D-glucopyranosyl-(1→3)-α-D-

glucopyranosyl-(1→6)] (I) or its mixts. with trehalose, pullulan, and/or cyclodextrin in the presence of aqueous media for inhibition of decrease of active O-scavenging activity. An aqueous solution (.apprx.100 L) containing 4% (weight/volume) phytoglycogen from corn was treated with an enzyme preparation (containing α-isomaltosylglucosaccharide-producing enzyme and α-isomaltosyltransferase, produced by Bacillus globisporus) at 30° and pH 6.0 for 48 h and the reaction mixture was purified to give 1170 g I of ≥99.9% purity. A powdered composition containing carrot 47.9, I 45.7, and H2O 6.4 weight% showed active O-scavenging activity of 590 and 390 U/g before and after 7-day storage at 40° in a sealed polystyrene container, resp., showing 66% residual activity after storage. Formulation examples of food compns., nutrient compns., cosmetics, bath prepns., and ointments are given.

IT 159640-28-5P
RL: BMF (Bioindustrial manufacture); BSU (Biological study, unclassified); COS (Cosmetic use); FFD (Food or feed use); PAC (Pharmacological activity); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
(cyclic tetrasaccharide and its compns. for inhibition of decrease of active oxygen-scavenging activity of plant-derived substances for foods, cosmetics, and pharmaceuticals)

RN 159640-28-5 HCAPLUS

CN α-D-Glucopyranose, O-α-D-glucopyranosyl-(1→3)-O-α-D-glucopyranosyl-(1→6)-O-α-D-glucopyranosyl-(1→3)-, cyclic 1,6'''-anhydride (9CI) (CA INDEX NAME)



=> d l87 ibib abs hitstr 1-3

L87 ANSWER 1 OF 46 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2007:350863 HCAPLUS <<LOGINID::20070424>>
DOCUMENT NUMBER: 146:337132
TITLE: Immunomodulating agent in gut
INVENTOR(S): Hino, Keiko; Kurose, Mayumi; Sakurai, Takeo; Inoue, Shinichiro; Ogawa, Tohru; Oku, Kazuyuki; Chaen, Hiroto; Fukuda, Shigeharu
PATENT ASSIGNEE(S): Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Japan
SOURCE: PCT Int. Appl., 22pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2007034748	A1	20070329	WO 2006-JP318390	20060915

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW

RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

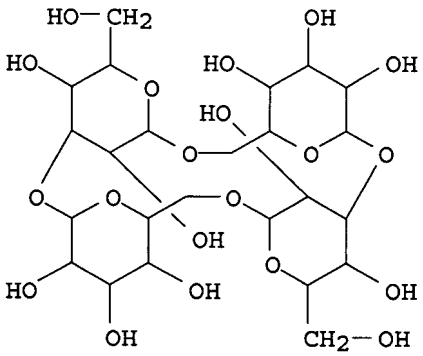
PRIORITY APPLN. INFO.: JP 2005-275360 A 20050922

AB Discloses is an immunomodulating agent in the gut, which can be ingested continuously in the daily dietary habit and does not produce any adverse side effect. The immunomodulating agent comprises a cyclic tetrasaccharide as an active ingredient. The cyclic tetrasaccharide promotes production of IgA and/or interferon-γ. Thus, cyclic tetrasaccharide syrup containing cyclo(→6)-α-D-glucopyranosyl-(1→3)-α-D-glucopyranosyl-(1→6)-α-D-glucopyranosyl-(1→3)-α-D-glucopyranosyl-(1→) was prepared from starch with α-amylase (Termamyl 60L), α-isomaltosylglucosaccharide synthase, and α-isomaltosyl transferase. The obtained cyclic tetrasaccharide syrup was combined with other ingredients to give a chewing gum.

IT 159640-28-5P
RL: BPN (Biosynthetic preparation); FFD (Food or feed use); PAC (Pharmacological activity); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
(intestinal immunomodulating agent containing cyclic tetrasaccharide)

RN 159640-28-5 HCAPLUS

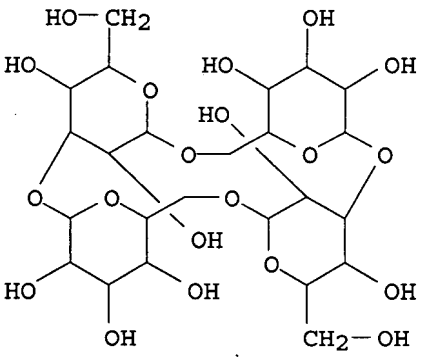
CN α-D-Glucopyranose, O-α-D-glucopyranosyl-(1→3)-O-α-D-glucopyranosyl-(1→6)-O-α-D-glucopyranosyl-(1→3)-, cyclic 1,6'''-anhydride (9CI) (CA INDEX NAME)



REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L87 ANSWER 2 OF 46 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2006:1184926 HCAPLUS <<LOGINID::20070424>>
DOCUMENT NUMBER: 146:141707
TITLE: Effect of dietary cyclic nigerosylnigerose on intestinal immune functions in mice

AUTHOR(S): Hino, Keiko; Kurose, Mayumi; Sakurai, Takeo; Inoue, Shin-ichiro; Oku, Kazuyuki; Chaen, Hiroto; Kohno, Keizo; Fukuda, Shigeharu
CORPORATE SOURCE: Glycoscience Institute, Research Center, Hayashibara Biochemical Laboratories, Inc., 675-1 Fujisaki, Okayama, 702-8006, Japan
SOURCE: Bioscience, Biotechnology, and Biochemistry (2006), 70(10), 2481-2487
CODEN: BBBIEJ; ISSN: 0916-8451
PUBLISHER: Japan Society for Bioscience, Biotechnology, and Agrochemistry
DOCUMENT TYPE: Journal
LANGUAGE: English
AB We examined the dietary effects of cyclic nigerosylnigerose (CNN), a dietary indigestible oligosaccharide with four D-glucopyranosyl residues linked by alternating α-(1→3)- and α-(1→6) glucosidic linkages, on the intestinal immune function of mice, and the effects were compared with those of α-(1→3)-linked oligosaccharide (nigerooligosaccharides, NOS) or α-(1→6)-linked oligosaccharide (isomaltooligosaccharides, IMO). BALB/c mice were fed with 1-5% CNN, 5% IMO, or 12.5% NOS for 4 wk, and the intestinal mucosal immune responses were determined In the 1-5% CNN fed groups, the amts. of IgA in feces increased significantly. In addition, IgA, transforming growth factor-β1 (TGF-β1), and interleukin-6 (IL-6) secretion by Peyer's patch (PP) cells were enhanced in CNN fed mice. In the 5% CNN group, pH in the cecum decreased, and the amts. of lactic acid and butyric acid increased. These findings were not observed in the NOS- or IMO-fed group of mice. They suggest that CNN supplementation changes the intestinal environment of microflora and indirectly enhances the immune function in the gut.
IT 159640-28-5
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(effect of dietary cyclic nigerosylnigerose on intestinal immune functions in mice)
RN 159640-28-5 HCAPLUS
CN α-D-Glucopyranose, O-α-D-glucopyranosyl-(1→3)-O-α-D-glucopyranosyl-(1→6)-O-α-D-glucopyranosyl-(1→3)-, cyclic 1,6'''-anhydride (9CI) (CA INDEX NAME)



REFERENCE COUNT: 32 THERE ARE 32 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L87 ANSWER 3 OF 46 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2006:880472 HCAPLUS <<LOGINID::20070424>>
DOCUMENT NUMBER: 145:334157
TITLE: Discovery of two cyclic tetrasaccharides synthesizing

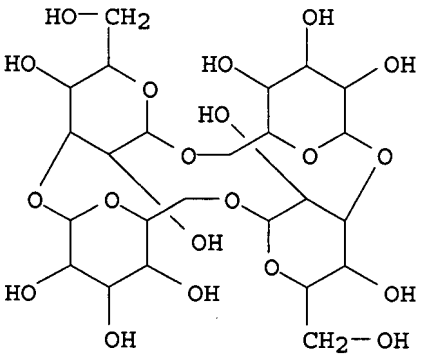
systems from starch
AUTHOR(S): Nishimoto, Tomoyuki; Oku, Kazuyuki; Mukai, Kazuhisa
CORPORATE SOURCE: Hayashibara Biochemical Laboratories, Inc., Japan
SOURCE: Kagaku to Seibutsu (2006), 44(8), 539-550
CODEN: KASEAA; ISSN: 0453-073X
PUBLISHER: Gakkai Shuppan Senta
DOCUMENT TYPE: Journal; General Review
LANGUAGE: Japanese

AB A review on the history of the starch saccharification products, structure and synthesis of cyclic oligosaccharides, enzymic synthesis of cyclic nigerosylnigerose (CNN) from alternan and starch, CNN biosynthetic enzymes of Bacillus globisporus, structure of CNN-related gene cluster, conditions of CNN formation, cyclic maltosylmaltose (CMM)-forming system in Arthrobacter globiformis, anal. of a novel maltosyltransferase gene, physiol. importance of cyclic oligosaccharides in bacteria, physicochem. characteristics of CNN and CMM, biol. activities of CNN, and future prospect.

IT 159640-28-5P
RL: BPN (Biosynthetic preparation); BSU (Biological study, unclassified); PRP (Properties); BIOL (Biological study); PREP (Preparation)
(enzymic synthesis of cyclic tetrasaccharides and their application)

RN 159640-28-5 HCAPLUS

CN α-D-Glucopyranose, O-α-D-glucopyranosyl-(1→3)-O-α-D-glucopyranosyl-(1→6)-O-α-D-glucopyranosyl-(1→3)-, cyclic 1,6'''-anhydride (9CI) (CA INDEX NAME)



```
=> s l87 and vitamin?
        221089 VITAMIN?
L90          4 L87 AND VITAMIN?

=> s l87 and vitamin? or cosmet?
        221089 VITAMIN?
         83214 COSMET?
L91      83216 L87 AND VITAMIN? OR COSMET?

=> s l87 and (vitamin? or cosmet? )
        221089 VITAMIN?
         83214 COSMET?
L92         13 L87 AND (VITAMIN? OR COSMET? )

=> s l92 not l88
L93         10 L92 NOT L88

=> s l93 ibib abs hitstr
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MISSING OPERATOR L93 IBIB
The search profile that was entered contains terms or
nested terms that are not separated by a logical operator.

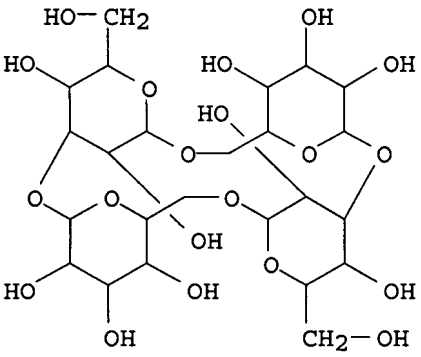
=> d l93 ibib abs hitstr

L93 ANSWER 1 OF 10 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2005:259624 HCAPLUS <<LOGINID::20070424>>
DOCUMENT NUMBER: 142:341452
TITLE: A reduction inhibitory agent for active-oxygen eliminating activity
INVENTOR(S): Oku, Kazuyuki; Kubota, Michio; Fukuda, Shigeharu; Miyake, Toshio
PATENT ASSIGNEE(S): Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Japan
SOURCE: U.S. Pat. Appl. Publ., 17 pp., Cont.-in-part of U.S. Ser. No. 299,678, abandoned.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.		DATE
US 2005065030	A1	20050324	US 2004-986287		20041112
JP 2003160495	A	20030603	JP 2001-355273		20011120
US 2003108593	A1	20030612	US 2002-299678		20021120
PRIORITY APPLN. INFO.:			JP 2001-355273	A	20011120
			US 2002-299678	B2	20021120

AB The invention provides (i) a reduction inhibitory agent for active-oxygen eliminating activity comprising a cyclotetrasaccharide as an effective ingredient and at least one member selected from saccharides and edible fibers, (ii) a method for inhibiting the reduction of active-oxygen eliminating activity comprising incorporating either cyclotetrasaccharide or the reduction inhibitory agent into products to be treated, and (iii) a composition which contains plant edible substance and/or plant antioxidant in which the reduction of active oxygen eliminating activity is inhibited by the above method. The composition is in the form of a food product, cosmetic or pharmaceutical. For example, fresh carrots were disrupted by a mixer and 10% of different saccharides (the cyclotetrasaccharide, glucose, mannitol, sorbitol, maltose, sucrose, trehalose, and pullulan) was added to the mixture and dissolved therein. The solns. were dried and pulverized into a powdery carrot composition About 100 g of each of the compns. was placed and sealed in a container and stored at 40° for 7 days. The composition with cyclotetrasaccharide had the highest residual percentage (66%) for active-oxygen eliminating activity, similar to trehalose. Also, 1 part of anhydrous amorphous cyclotetrasaccharide, 0.3 part of cyclodextrin, and optionally 0.3 part of trehalose were mixed to obtain a powder having an active-oxygen eliminating activity. In use, 50 g of the product is dissolved in 1 L of water and used for whitening and beautifying hands and face.

IT 159640-28-5P
RL: BPN (Biosynthetic preparation); COS (Cosmetic use); FFD (Food or feed use); RCT (Reactant); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
(reduction inhibitory agent comprising cyclotetrasaccharide for active-oxygen eliminating activity)
RN 159640-28-5 HCAPLUS
CN α-D-Glucopyranose, O-α-D-glucopyranosyl-(1→3)-O-α-D-glucopyranosyl-(1→6)-O-α-D-glucopyranosyl-(1→3)-, cyclic 1,6'''-anhydride (9CI) (CA INDEX NAME)



=> d l93 ibib abs hitstr 2-10

L93 ANSWER 2 OF 10 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2004:545830 HCAPLUS <<LOGINID::20070424>>
DOCUMENT NUMBER: 141:94013
TITLE: Skin compositions containing Spilanthes-derived local pain relievers
INVENTOR(S): Yamauchi, Hiroshi; Taniguchi, Mutsuko; Shibuya, Takashi; Kurimoto, Masashi
PATENT ASSIGNEE(S): Hayashibara Biochemical Laboratories, Inc., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 14 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

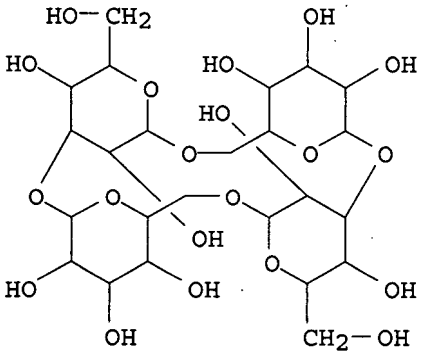
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004189660	A	20040708	JP 2002-358669	20021210

PRIORITY APPLN. INFO.: JP 2002-358669 20021210

AB The invention relates to a skin composition containing Spilanthes acmella oleracea and/or Spilanthes oleracea-derived local pain reliever, suitable for use in depilatory with a stabilizer containing α,α-trehalose, maltose, etc. Spilanthol was isolated from Spilanthes oleracea, and its effect on depilation-induced local pain relief was examined

IT 159640-28-5
RL: COS (Cosmetic use); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(skin compns. containing Spilanthes-derived local pain relievers with stabilizers)

RN 159640-28-5 HCAPLUS
CN α-D-Glucopyranose, O-α-D-glucopyranosyl-(1→3)-O-α-D-glucopyranosyl-(1→6)-O-α-D-glucopyranosyl-(1→3)-, cyclic 1,6'''-anhydride (9CI) (CA INDEX NAME)

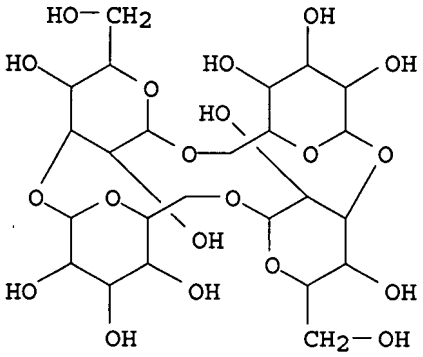


L93 ANSWER 3 OF 10 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2004:203909 HCAPLUS <<LOGINID::20070424>>
DOCUMENT NUMBER: 140:255243
TITLE: Glucopyranose cyclic tetrasaccharide radical reaction inhibitors, method for inhibition of radical reactions, and use thereof
INVENTOR(S): Oku, Kazuyuki; Kubota, Michio; Fukuda, Shigeharu; Miyake, Toshio
PATENT ASSIGNEE(S): Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Japan
SOURCE: PCT Int. Appl., 64 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004020552	A1	20040311	WO 2003-JP10794	20030826
W: JP, US				
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR				
EP 1541660	A1	20050615	EP 2003-791307	20030826
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, SK				
US 2005267067	A1	20051201	US 2005-525839	20050225
PRIORITY APPLN. INFO.:			JP 2002-256069 A	20020830
			WO 2003-JP10794 W	20030826

AB The problem of the invention is to provide radical reaction inhibitors for inhibiting unsatd. compds. from decomposing through radical reactions, a method for inhibiting the formation of free radicals from unsatd. compds. and radical reactions of the compds., and compns. which are suppressed in radical formation, radical reactions, or progress of both. The above problem is solved by establishing radical reaction inhibitors containing as the active ingredient cyclic tetrasaccharides or mixts. of cyclic tetrasaccharides with saccharide derivs. thereof. Thus, cyclic tetrasaccharide cyclo{α-D-glucopyranosyl-(1→3)-α-D-glucopyranosyl-(1→6)-α-D-glucopyranosyl-(1→3)α-D-glucopyranosyl-(1→6)} prepared from starch showed good radical formation reduction and linoleic acid radical oxidation reduction
IT 159640-28-5P
RL: CAT (Catalyst use); COS (Cosmetic use); FFD (Food or feed use); IMF (Industrial manufacture); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
(glucopyranose cyclic tetrasaccharide radical reaction inhibitor

compns.)
RN 159640-28-5 HCAPLUS
CN α-D-Glucopyranose, O-α-D-glucopyranosyl-(1→3)-O-α-D-glucopyranosyl-(1→6)-O-α-D-glucopyranosyl-(1→3)-, cyclic 1,6'''-anhydride (9CI) (CA INDEX NAME)



REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L93 ANSWER 4 OF 10 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2003:417841 HCAPLUS <<LOGINID::20070424>>
DOCUMENT NUMBER: 139:11887
TITLE: Method of sustaining aroma with cyclic tetrasaccharides and use thereof
INVENTOR(S): Oku, Kazuyuki; Kubota, Michio; Fukuda, Shigeharu; Miyake, Toshio
PATENT ASSIGNEE(S): Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Japan
SOURCE: PCT Int. Appl., 53 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2003044143	A1	20030530	WO 2002-JP12196	20021121
W: KR, US				
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR				
JP 2004002620	A	20040108	JP 2002-256070	20020830
EP 1460123	A1	20040922	EP 2002-803561	20021121
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY, TR, BG, CZ, EE, SK				
US 2005013914	A1	20050120	US 2004-496382	20040524

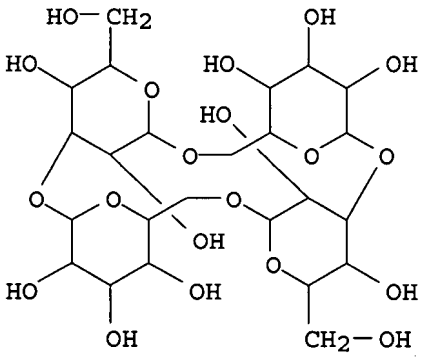
PRIORITY APPLN. INFO.:
JP 2001-358562 A 20011122
JP 2002-118439 A 20020419
JP 2002-256070 A 20020830
WO 2002-JP12196 W 20021121

AB Disclosed are a method of sustaining an aroma which comprises blending an aroma substance with a cyclic tetrasaccharide or a hydrocarbonate derivative of the cyclic tetrasaccharide; aroma-sustaining materials obtained by this method; compns. containing the aroma-sustaining materials; aroma-sustaining agents having as the active ingredient the cyclic tetrasaccharide or a mixture of the cyclic tetrasaccharide with a hydrocarbonate derivative of the

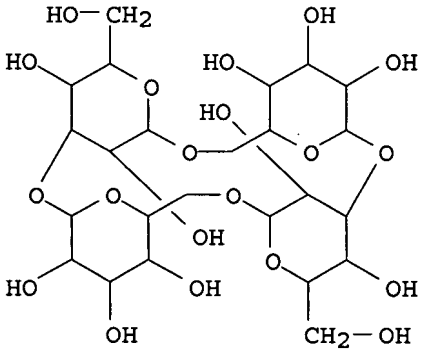
cyclic tetrasaccharide; and bactericides with the use of the sustained-releasing effect of the aroma-sustaining materials. A pretreated starch solution was treated with α-isomaltosylglucosaccharide synthase and α-isomaltosyltransferase obtained from Bacillus globisporus to produce a cyclic tetrasaccharide. The obtained cyclic tetrasaccharide was mixed with ethanol or other liquid aroma compound to make a sustained-release aroma composition

IT 159640-28-5P 532945-75-8P 532945-76-9P
RL: BPN (Biosynthetic preparation); BUU (Biological use, unclassified); COS (Cosmetic use); FFD (Food or feed use); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
(method of sustaining aroma with cyclic tetrasaccharides and use thereof)

RN 159640-28-5 HCAPLUS
CN α-D-Glucopyranose, O-α-D-glucopyranosyl-(1→3)-O-α-D-glucopyranosyl-(1→6)-O-α-D-glucopyranosyl-(1→3)-, cyclic 1,6'''-anhydride (9CI) (CA INDEX NAME)

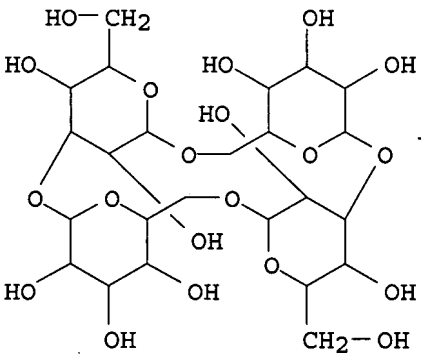


RN 532945-75-8 HCAPLUS
CN α-D-Glucopyranose, O-α-D-glucopyranosyl-(1→3)-O-α-D-glucopyranosyl-(1→6)-O-α-D-glucopyranosyl-(1→3)-, cyclic 1,6'''-anhydride, monohydrate (9CI) (CA INDEX NAME)



RN 532945-76-9 HCAPLUS
CN α-D-Glucopyranose, O-α-D-glucopyranosyl-(1→3)-O-α-

D-glucopyranosyl-(1→6)-O-α-D-glucopyranosyl-(1→3)-,
cyclic 1,6'''-anhydride, pentahydrate (9CI) (CA INDEX NAME)



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REFERENCE COUNT: 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L93 ANSWER 5 OF 10 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2003:320071 HCAPLUS <<LOGINID::20070424>>
DOCUMENT NUMBER: 138:352851
TITLE: Processes for producing isomaltose and isomaltitol and use thereof
INVENTOR(S): Kubota, Michio; Nishimoto, Tomoyuki; Sonoda, Tomohiko; Fukuda, Shigeharu; Miyake, Toshio
PATENT ASSIGNEE(S): Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Japan
SOURCE: PCT Int. Appl., 262 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.		DATE
WO 2003033717	A1	20030424	WO 2002-JP10846		20021018
W: JP, KR, US					
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR					
EP 1445325	A1	20040811	EP 2002-788581		20021018
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, SK					
US 2006240531	A1	20061026	US 2004-492932		20040419
PRIORITY APPLN. INFO.:			JP 2001-321182	A	20011018
			JP 2002-252609	A	20020830
			WO 2002-JP10846	W	20021018

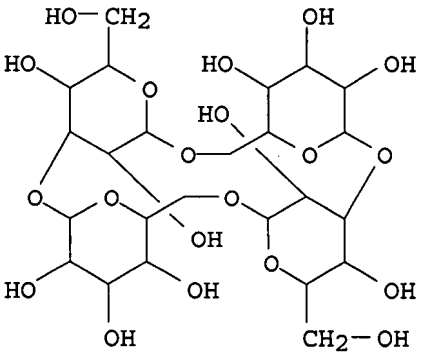
AB The isomaltose is com. manufactured from sugars (d.p., 2) having α-1,4 glucosyl linkage at the nonreducing end with α-isomaltosyltranferase of Bacillus globisporus and/or Arthrobacter globiformis; and/or α-isomaltosylgluco sugar-forming enzyme(s) of B. globiformis, A. globiformis, and/or A. ramosus to obtain sugars (d.p.. ≥3) that have α-1,6-glucosyl linkage at the reducing end and α-1,4-linkage at the nonreducing linkage. The sugars (d.p.,

≥3) are incubated with isomaltose-releasing enzyme(s) to get isomaltose. The isomaltose is reduced to get the isomaltitol.

IT 159640-28-5P
RL: BPN (Biosynthetic preparation); BSU (Biological study, unclassified); RCT (Reactant); BIOL (Biological study); PREP (Preparation); RACT (Reactant or reagent)
(isomaltose enzymic manufacture with Bacillus and Arthrobacter and isomaltitol manufacture from isomaltose by reduction)

RN 159640-28-5 HCAPLUS

CN α-D-Glucopyranose, O-α-D-glucopyranosyl-(1→3)-O-α-D-glucopyranosyl-(1→6)-O-α-D-glucopyranosyl-(1→3)-, cyclic 1,6'''-anhydride (9CI) (CA INDEX NAME)



REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L93 ANSWER 6 OF 10 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2002:849837 HCAPLUS <<LOGINID::20070424>>
DOCUMENT NUMBER: 137:368683
TITLE: Enzymic low-cost and high-purity manufacture of isomaltose and use thereof
INVENTOR(S): Kubota, Michio; Nishimoto, Tomoyuki; Higashiyama, Takanobu; Watanabe, Hikaru; Fukuda, Shigeharu; Miyake, Toshio
PATENT ASSIGNEE(S): Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Japan
SOURCE: PCT Int. Appl., 121 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002088374	A1	20021107	WO 2002-JP4166	20020425
W: AU, CA, CN, JP, KR, US				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				
AU 2002255280	A1	20021111	AU 2002-255280	20020425
AU 2002255280	A2	20021111		
CA 2413164	A1	20021216	CA 2002-2413164	20020425
EP 1382687	A1	20040121	EP 2002-724644	20020425
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY, TR				
US 2004253690	A1	20041216	US 2003-363556	20030305

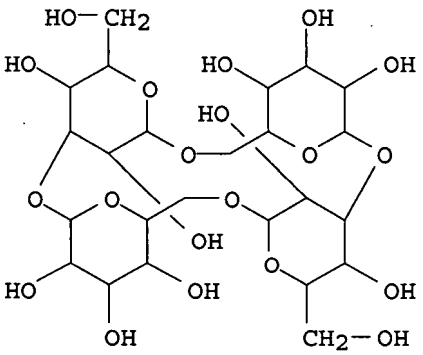
PRIORITY APPLN. INFO.: JP 2001-130922 A 20010427
WO 2002-JP4166 W 20020425

AB Isomaltose is manufactured com. at low cost from α-isomaltosylglucosaccharide that has α-1,6 glucosyl linkage at the non-reducing end and α-1,4-glucosyl linkage and that has ≥3 glucose units and cyclic tetraose cyclo{→6)-α-D-glucopyranosyl-(1→3)-α-D-glucopyranosyl-(1→6)-α-D-glucopyranosyl-(1→3)-α-D-glucopyranosyl-(1→} with isomaltose-releasing enzyme. The α-isomaltosylglucosaccharide and cyclic tetraose are in turn manufactured from saccharides that has α-1,4 glucosyl linkage at the non-reducing end and that has ≥2 glucose units with α-isomaltosylglucosaccharide-formation enzyme in the presence/absence of α-isomaltosyl transferring enzyme. The isomaltose is useful in food, cosmetic, and pharmaceutical industries.

IT 159640-28-5P
RL: BPN (Biosynthetic preparation); RCT (Reactant); BIOL (Biological study); PREP (Preparation); RACT (Reactant or reagent)
(enzymic low-cost and high-purity manufacture of isomaltose and use thereof)

RN 159640-28-5 HCAPLUS

CN α-D-Glucopyranose, O-α-D-glucopyranosyl-(1→3)-O-α-D-glucopyranosyl-(1→6)-O-α-D-glucopyranosyl-(1→3)-, cyclic 1,6'''-anhydride (9CI) (CA INDEX NAME)



REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L93 ANSWER 7 OF 10 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2002:716286 HCAPLUS <<LOGINID::20070424>>
DOCUMENT NUMBER: 137:249411
TITLE: Branched cyclic tetrassacharide, process for producing the same, and use in cosmetic, food and drug
INVENTOR(S): Aga, Hajime; Higashiyama, Takanobu; Watanabe, Hikaru; Sonoda, Tomohiko; Kubota, Michio
PATENT ASSIGNEE(S): Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Japan
SOURCE: PCT Int. Appl., 133 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002072594	A1	20020919	WO 2002-JP2213	20020308

W: JP, US
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR

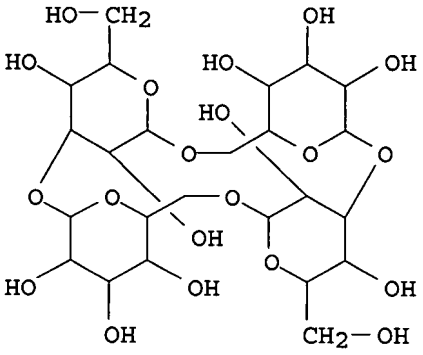
EP 1380595	A1	20040114	EP 2002-705093	20020308
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY, TR				
US 2004236097	A1	20041125	US 2003-471377	20030909
PRIORITY APPLN. INFO.:			JP 2001-67282 A	20010309
			WO 2002-JP2213 W	20020308

AB The cyclic tetrassacharide is a glycosyl derivative represented by cyclo[→6)-α-D-glucopyranosyl-(1→3)-α-D-glucopyranosyl-(1→6)-α-D-glucopyranosyl-(1→3)-α-D-glucopyranosyl-(1→]. It is a branched cyclic tetrassacharide in which one or more H atoms of the hydroxyl groups have been replaced with an optionally substituted glycosyl group (provided that when the H atom of the hydroxyl group bonded to the 6-position C in each glucopyranosyl is the only H atom which has been replaced, the substituent is a group selected among glycosyl groups excluding D-glucosyl). The branched cyclic tetrassacharide is useful for cosmetic, food and pharmaceutical, and can be produced by fermentation using a glycosyl transferase type enzymes such as cyclomaltodextrin glucanotransferase, β-galactosidase, α-galactosidase, lysozyme, α-isomaltosyl transferase and α-isomaltosyl glucosyl transferase.

IT 159640-28-5P
RL: BCP (Biochemical process); BMF (Bioindustrial manufacture); BIOL (Biological study); PREP (Preparation); PROC (Process)
(branched cyclic tetrassacharide, enzymic process for manufacture and use in cosmetic, food and pharmaceuticals)

RN 159640-28-5 HCAPLUS

CN α-D-Glucopyranose, O-α-D-glucopyranosyl-(1→3)-O-α-D-glucopyranosyl-(1→6)-O-α-D-glucopyranosyl-(1→3)-, cyclic 1,6'''-anhydride (9CI) (CA INDEX NAME)



REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L93 ANSWER 8 OF 10 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER:	2002:688160 HCAPLUS <<LOGINID::20070424>>
DOCUMENT NUMBER:	137:217171
TITLE:	Preparation of carbohydrate mixture containing α-isomaltosylmaltotriose and sugar alcohols and method for production thereof
INVENTOR(S):	Kubota, Norio; Nishimoto, Tomoyuki; Aga, Hajime; Fukuda, Yoshiharu; Miyake, Toshio
PATENT ASSIGNEE(S):	Hayashibara Biochemical Laboratories, Inc., Japan
SOURCE:	Jpn. Kokai Tokkyo Koho, 47 pp.

CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

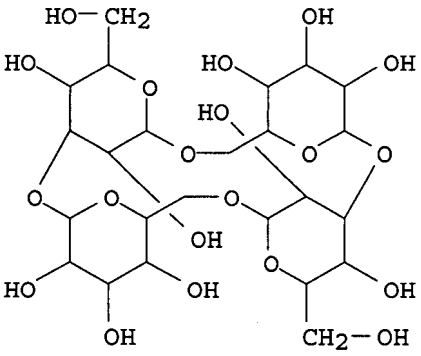
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002255988	A	20020911	JP 2001-60460	20010305

PRIORITY APPLN. INFO.: JP 2001-60460 20010305

AB A carbohydrate mixture containing cyclo[-α-D-glucopyranosyl-(1→3)-α-D-glucopyranosyl-(1→6)-α-D-glucopyranosyl-(1→3)-α-D-glucopyranosyl-(1→6)] (α-isomaltosylmaltotriose or 64-O-α-glucosylmaltotetraose) (I) and sugar alcs. is prepared by reduction of a carbohydrate mixture containing the cyclic tetrasaccharide compound I and reducing sugars to decrease the reducibility. The starting carbohydrate mixture is obtained by reaction of α-isomaltosylglucosaccharide with α-isomaltosyl transferase or reaction of partially hydrolyzed product of starch having DE (dextrose equivalent) of ≤20 with α-isomaltosylglucosaccharide synthase and α-isomaltosyl transferase. Also disclosed are beverages, in particular low calorie beverages, cosmetics, or drugs containing the above carbohydrate mixture The present carbohydrate mixture is a stable sweetening agent which is useful as a taste or flavor improver, quality improver, or excipient for beverages, food, feed, cosmetics, or drugs. Thus, a liquid fermentation medium (100 mL) containing Pindex 1 5, yeast extract (Asahi Meast) 1.5, k2HPO4 0.1, NaH2PO4.12H2O 0.06, MgSO4.7H2O 0.05 weight/volume % and H2O was sterilized under heating at 120° for 20 min, cooled, inoculated by Bacillus globisporus C9 (FERM BP-7143), shake-cultured at 27° for 48 h, and centrifuged to obtain a supernatant liquid which was heated at 120° for 15 min, cooled, and centrifuged to give a supernatant liquid The supernatant liquid (90 mL) was adjusted to pH 5.0 and warmed to 40°, treated with 1,500 unit α-glucosidase (transglycosidase L [Amano] J) and 75 unit glucoamylase (Nagase Biochem. Industry Inc., Japan) for 24 h, adjusted to pH 12, boiled for 2 h to decompose residual reducing sugars, filtered, and desalted by Diaion PK218 and Diaion WA30 and then again with Diaion SK-1B and IRA 411 to give .apprx.0.6 g I (99.9% purity). I was stable in aqueous AcOH (pH 3.0-5.0), Tris-HCl buffer (pH 6.0-8.0), ammonium buffer (9.0-10.0) at 100° for 24 h and was not hydrolyzed by saliva amylase, and formed inclusion complexes with MeOH, EtOH, and AcOH. The two enzymes, i.e. α-isomaltosylglucosaccharide synthase and α-isomaltosyl transferase, were isolated and purified from the fermentation broth obtained similarly by fermentation of B. globisporus C9. In another experiment, a fermentation broth of B. globisporus C9 containing 8.8 unit/mL α-isomaltosyl glucosaccharide synthetase and 26.7 unit/mL α-isomaltosyl transferase was added at 0.25 mL/1 g starch to 2% aqueous 1 mM potato starch containing 1 mM CaCl2, adjusted to pH 6.0, stirred at 35° for 48 h, heated at 95° for 10 min, purified by decolorization and desaltation, and concentrated to give a 40% syrup containing I which was hydrogenated in the presence of 6% Raney nickel at 120° and 20-120 kg/cm2, filtered to remove the catalyst, purified by decolorization and desaltation, and concentrated to give a 70% syrup containing I 62.1, sorbitol 0.7, isomaltitol 1.4, maltitol 11.1 and other sugars 24.7%. The carbohydrate mixture exhibited mild sweetness, moderate viscosity, moisturizing property, and inclusion property.

IT 159640-28-5P
RL: BPN (Biosynthetic preparation); BSU (Biological study, unclassified); FFD (Food or feed use); IMF (Industrial manufacture); PRP (Properties); BIOL (Biological study); PREP (Preparation); USES (Uses)
(preparation of carbohydrate mixture containing cyclic tetraglucose and sugar alcs. as sweetening agents by enzymic glycosylation of partially hydrolyzed starch)

RN 159640-28-5 HCAPLUS
CN α-D-Glucopyranose, O-α-D-glucopyranosyl-(1→3)-O-α-D-glucopyranosyl-(1→6)-O-α-D-glucopyranosyl-(1→3)-, cyclic 1,6'''-anhydride (9CI) (CA INDEX NAME)



L93 ANSWER 9 OF 10 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2002:107521 HCAPLUS <<LOGINID::20070424>>
DOCUMENT NUMBER: 136:163295
TITLE: α-Isomaltosylglucosaccharide synthase from Bacillus and Arthrobacter catalyzing synthesis of cyclic tetrasaccharide, and food, cosmetics, and pharmaceutical applications
INVENTOR(S): Kubota, Michio; Tsusaki, Keiji; Higashiyama, Takanobu; Fukuda, Shigeharu; Miyake, Toshio
PATENT ASSIGNEE(S): Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Japan
SOURCE: PCT Int. Appl., 209 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.		DATE
WO 2002010361	A1	20020207	WO 2001-JP6412		20010725
W: AU, CA, CN, JP, KR, US					
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR					
CA 2385465	A1	20020207	CA 2001-2385465		20010725
AU 2001080095	A5	20020213	AU 2001-80095		20010725
AU 781630	B2	20050602			
EP 1229112	A1	20020807	EP 2001-958377		20010725
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY, TR					
US 2003194762	A1	20031016	US 2002-89549		20020401
PRIORITY APPLN. INFO.:			JP 2000-233364	A	20000801
			JP 2000-234937	A	20000802
			WO 2001-JP6412	W	20010725

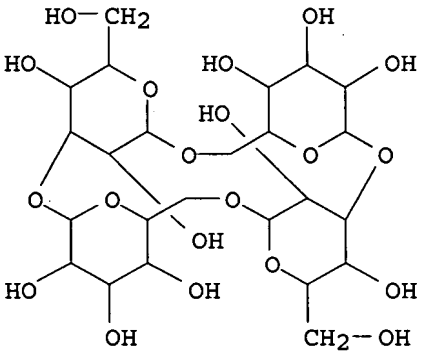
AB α-Isomaltosylglucosaccharide synthase capable of forming a cyclic tetrasaccharide having a cyclo { - 6} -α-D-glucopyranosyl- (1-3) -α-D-glucopyranosyl- (1-6) -α-D-glucopyranosyl- (1-3) -α-D-glucopyranosyl- (1 -) structure via a reaction involving α-isomaltosyl transfer starting from a saccharide having an α-1,6-glucosyl bond at the non-reducing end and an

α-1,4-glucosyl bond at the other end and having a degree of glucose polymerization of at least 3, is provided. Also, recombinant expression of the above enzyme in microorganisms, use in production of the cyclic tetrasaccharide, and use of such sugars in food, cosmetics, and pharmaceutical applications, are claimed. Use of α-isomaltosyltransferase in combination with the above mentioned α-isomaltosylglucosaccharide synthase in the synthesis of cyclic tetrasaccharides and carbohydrates containing it, is claimed. Maltooligosaccharide, maltodextrin, amylodextrin, amylose, amylopectin, soluble, liquefied, or glutinous starch, and glycogen, are the donor saccharides. D-glucose, D-xylose, L-xylose, D-galactose, D-fructose, D-mannose, D-arabinose, D-fucose, D-psicose, D-sorbose, methyl-α-glucose, methyl-β-glucose, N-acetylglucosamine, trehalose, isomaltose, isomaltotriose, cellobiose, gentiobiose, glycerol, maltitol, lactose, sucrose, or L-ascorbic acid, are the acceptor saccharides. The enzyme activity is stabilized by Ca2+, and Mn2+, and inhibited by Hg2+, Cu2+, and EDTA. Bacillus globisporus, or Arthrobacter globiformis, can be used as expression host. Isolation of the enzyme from Bacillus globisporus C9, C11, N75 strains, and Arthrobacter globiformis, and characterization of catalytic activity, including substrate specificity, are described.

IT 159640-28-5P
RL: BMF (Bioindustrial manufacture); BPN (Biosynthetic preparation); BSU (Biological study, unclassified); BIOL (Biological study); PREP (Preparation)
(α-Isomaltosylglucosaccharide synthase from Bacillus and Arthrobacter catalyzing synthesis of cyclic tetrasaccharide, and food, cosmetics, and pharmaceutical applications)

RN 159640-28-5 HCAPLUS

CN α-D-Glucopyranose, O-α-D-glucopyranosyl-(1→3)-O-α-D-glucopyranosyl-(1→6)-O-α-D-glucopyranosyl-(1→3)-, cyclic 1,6'''-anhydride (9CI) (CA INDEX NAME)



REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L93 ANSWER 10 OF 10 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2001:868662 HCAPLUS <<LOGINID::20070424>>
DOCUMENT NUMBER: 136:2254
TITLE: α-Isomaltosyltransferase catalyzing synthesis of cyclic tetrasaccharide from Bacillus and Arthrobacter, isolation, and food, cosmetics, and pharmaceutical applications
INVENTOR(S): Kubota, Michio; Nishimoto, Tomoyuki; Aga, Hajime; Fukuda, Shigeharu; Miyake, Toshio
PATENT ASSIGNEE(S): Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo,

Japan
SOURCE: PCT Int. Appl., 158 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001090338	A1	20011129	WO 2001-JP4276	20010522
W: JP, KR, US				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				
EP 1284286	A1	20030219	EP 2001-930244	20010522
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
US 2005009017	A1	20050113	US 2002-296153	20021122
US 7192746	B2	20070320		

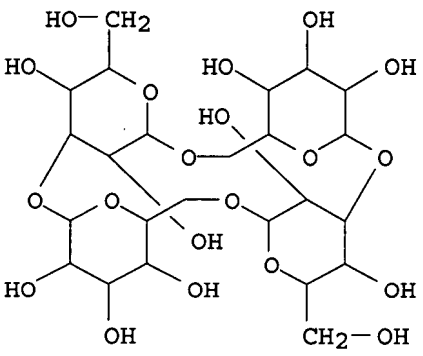
PRIORITY APPLN. INFO.:
JP 2000-149484 A 20000522
JP 2000-229557 A 20000728
WO 2001-JP4276 W 20010522

AB α-Isomaltosyltransferase capable of forming a cyclic tetrasaccharide having a cyclo { - 6} -α-D-glucopyranosyl- (1-3) -α-D-glucopyranosyl- (1-6) -α-D-glucopyranosyl- (1-3) -α-D-glucopyranosyl- (1 -) structure via a reaction involving α-isomaltosyl transfer starting from a saccharide having an α-1,6-glucosyl bond at the non-reducing end and an α-1,4-glucosyl bond at the other end and having a degree of glucose polymerization of at least 3, is provided. Also, recombinant expression of the above enzyme in microorganisms, use in production of the cyclic tetrasaccharide, and use of such sugars in food, cosmetics, and pharmaceutical applications, are claimed. Isolation of the enzyme from Bacillus globisporus C9, C11, N75 strains, Arthrobacter ramosus S1, Arthrobacter globiformis, and characterization of catalytic activity, including substrate specificity, are described.

IT 159640-28-5P
RL: BMF (Bioindustrial manufacture); BPN (Biosynthetic preparation); BSU (Biological study, unclassified); BIOL (Biological study); PREP (Preparation)
(α-isomaltosyltransferase catalyzing synthesis of cyclic tetrasaccharide from Bacillus and Arthrobacter, recombinant expression, and food, cosmetics, and pharmaceutical applications)

RN 159640-28-5 HCAPLUS

CN α-D-Glucopyranose, O-α-D-glucopyranosyl-(1→3)-O-α-D-glucopyranosyl-(1→6)-O-α-D-glucopyranosyl-(1→3)-, cyclic 1,6'''-anhydride (9CI) (CA INDEX NAME)



EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
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S5	47	((KAZUYUKI) near2 (OKU)).INV.	EPO; JPO; DERWENT	NEAR	ON	2007/04/24 15:58
S6	85	((MICHIO) near2 (KUBOTA)).INV.	US-PGPUB; USPAT	NEAR	ON	2007/04/24 15:57
S7	213	((TOSHIO) near2 (MIYAKE)).INV.	US-PGPUB; USPAT	NEAR	ON	2007/04/24 16:02
S8	20	((SHIGEHARU) near2 (FUKUDA)).INV.	USPAT	NEAR	ON	2007/04/24 16:02
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S10	47	((KAZUYUKI) near2 (OKU)).INV.	EPO; JPO; DERWENT	NEAR	ON	2007/04/24 17:10
S11	85	((MICHIO) near2 (KUBOTA)).INV.	US-PGPUB; USPAT	NEAR	ON	2007/04/24 17:10
S12	213	((TOSHIO) near2 (MIYAKE)).INV.	US-PGPUB; USPAT	NEAR	ON	2007/04/24 17:10
S13	20	((SHIGEHARU) near2 (FUKUDA)).INV.	USPAT	NEAR	ON	2007/04/24 17:10
S14	309	S9 or S10 or S11 or S12 or S13	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2007/04/24 17:11
S15	57	S14 and cyclic	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2007/04/24 17:11
S16	34	S14 and (cyclic tetrasaccharide)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2007/04/24 17:51
S17	18	((KAZUYUKI) near2 (OKU)).INV.	US-PGPUB; USPAT	NEAR	ON	2007/04/24 17:51
S18	47	((KAZUYUKI) near2 (OKU)).INV.	EPO; JPO; DERWENT	NEAR	ON	2007/04/24 17:51
S19	85	((MICHIO) near2 (KUBOTA)).INV.	US-PGPUB; USPAT	NEAR	ON	2007/04/24 17:51

EAST Search History

S20	213	((TOSHIO) near2 (MIYAKE)).INV.	US-PGPUB; USPAT	NEAR	ON	2007/04/24 17:51
S21	20	((SHIGEHARU) near2 (FUKUDA)). INV.	USPAT	NEAR	ON	2007/04/24 17:51
S22	309	S17 or S18 or S19 or S20 or S21	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2007/04/24 17:51
S23	22	S22 and (cyclic tetrasaccharide)	US-PGPUB; USPAT	NEAR	ON	2007/04/24 17:52
S24	1	"7197246"	US-PGPUB; USPAT	NEAR	ON	2007/04/25 09:45
S25	1	"7192746"	US-PGPUB; USPAT	NEAR	ON	2007/04/25 09:45
S26	1	"6562600"	US-PGPUB; USPAT	NEAR	ON	2007/04/25 11:28
S27	10	"5786196"	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2007/04/26 15:03